

South African Medical Journal

Organ of the Medical Association of South Africa



S.-A. Tydskrif vir Geneeskunde

Vakblad van die Mediese Vereniging van Suid-Afrika

Incorporating the South African Medical Record and the Medical Journal of South Africa

REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER

Vol. 25, No. 20

Cape Town, 19 May 1951

Weekly 2s

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Vol. 25, No. 20

Cape Town, 19 May 1951

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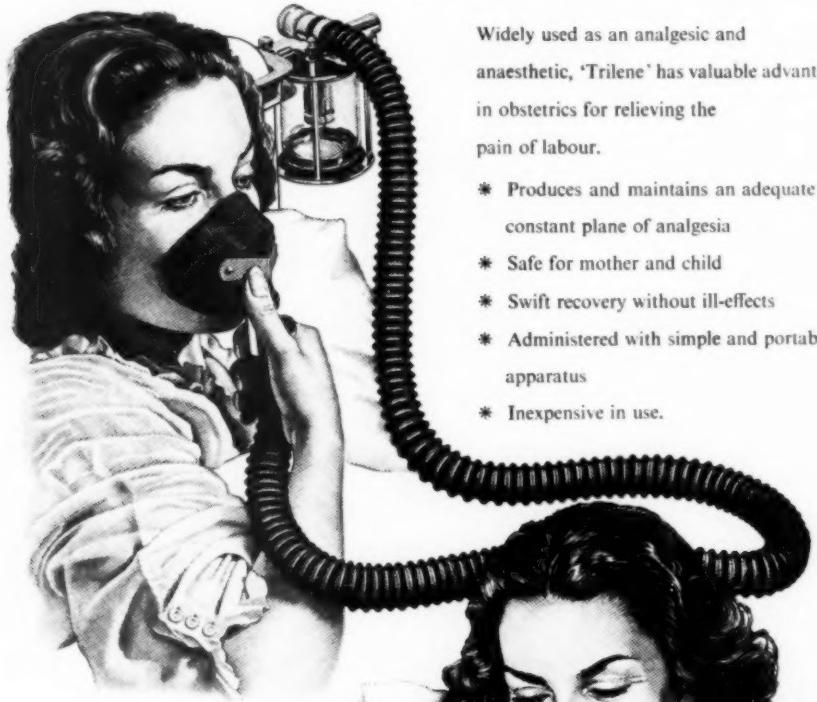
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South African Medical Journal

Suid-Afrikaanse Tydskrif vir Geneeskunde

Vol. 25, No. 20

Cape Town, 19 May 1951

Weekly 2s

MILD INFANTILE DIARRHOEA

TREATED BY SIMPLE DIETETIC MEASURES AND ORAL POTASSIUM

WILLIAM EMDIN, M.D., D.P.H., Ph.D., B.A.

Cape Town

This article records the results of treating ambulatory patients suffering from acute mild infantile gastro-enteritis by means of a simple dietetic scheme and the results of adding a potassium-containing mineral salt solution. In a previous investigation (Emdin¹), a comprehensive therapeutic plan was applied to severe infantile diarrhoea complicated by dehydration; it was found that rehydration and clinical improvement could be effected in these cases by the administration of the suprarenal cortical hormone parenterally and potassium chloride (Darrow's Solution) by mouth. The cases to be reviewed in the present study were not dehydrated, hence there was no necessity to use the adrenal hormone, but one of the objects of this investigation was to assess the value of potassium in mild diarrhoea.

This work was carried out at the Aspeling Street Infant and Child Welfare Centre of the City of Cape Town Health Department during the summer months of two successive years and the subjects of the investigation were non-European infants. These babies, 200 in all, were treated as ambulatory cases throughout the course of their illness and the mothers were instructed to report daily with their infants while these were under observation. The Aspeling Street Centre is situated in a slum area inhabited predominantly by Cape Coloured people and one in which poverty and squalor are rife. The majority of infants in this area live in a most unhealthy environment; many of the families are indigent and their dwellings insanitary and overcrowded. Because of poverty, ignorance, lack of education and, in some cases, indifference on the part of many of the mothers attending the Centre, a scheme of treatment would have to be simple were it to be carried through successfully. As will be seen, the treatment scheme used here was simplicity itself.

The babies treated under this scheme were all suffering from recent mild diarrhoea and had been in fair to good general health prior to the onset of the gastro-enteritis. Their ages varied from one to 18 months and the average weight for age before the commencement of loose stools was parallel to the average weights for Coloured children in Cape Town as assessed by Woodrow and Robertson.² All of these babies had been partially or wholly on

artificial milk feeds prior to the onset of the diarrhoea; 166 were completely on artificial feeds and 34 had received breast feeds plus complement. No fully breast-fed babies are included in this series. In the majority of cases the history was that of loose stools for three or four days with normal or only slightly raised temperature, and no evidence of dehydration. Streaks of blood appeared in the stools of three cases. Vomiting was not a feature of the ailment and when present, it appeared chiefly in weaklings and younger infants, as was to be expected (Emdin³).

In the attempt to assess the therapeutic value of potassium, the cases were divided into two groups of 100 infants each, one of which received potassium and the other did not. The rationale for the use of potassium is interesting. Holt, Courtney and Fales⁴ some 35 years ago showed that diarrhoeal stools contain in addition to water, large amounts of mineral salts, including potassium salts. Recently it was found that in infantile diarrhoea potassium leaves the body in appreciable quantity; in fact, potassium is lost in excess of body nitrogen (Darrow *et al.*⁵). In the body, mineral salts carry minute charges of electricity and are dissociated into anions and cations, hence the term 'electrolytes'. Diarrhoea is accompanied by excessive excretion of water, protein, and electrolyte: chloride ions, sodium ions and bicarbonate ions (mainly extracellular electrolytes); potassium ions and magnesium ions (mainly intracellular electrolytes). McIntosh and his co-workers⁶ have proved that water loss is always accompanied by loss of electrolyte and vice versa; in fact, prolonged electrolyte loss produces dehydration (Gamble⁷; Darrow⁸; Darrow and Yannet⁹). Therapeutically, it is therefore necessary to replenish electrolyte as well as fluid.

In spite of our knowledge that gastro-enteritis is associated with excessive excretion of potassium, this mineral was not used for replacement purposes until fairly recently because it was believed that the cell membrane is impermeable to the passage of electrolyte and that therefore potassium cannot be taken up by the cells. It will be remembered that this ion is present chiefly within the body cells; only 2% is extracellular (Leonsins¹⁰); Darrow and others working independently¹¹

discovered, however, that the cell membrane does allow electrolytes to pass freely. This finding led to the therapeutic use of a sodium-potassium-chloride-bicarbonate solution (Darrow's Solution) for the replacement of intracellular as well as extracellular electrolyte (Govan and Darrow¹²; Butler *et al.*¹³). Clinically, Darrow¹⁴ and also Donaldson¹⁵ have recorded the fact that infants with gastro-enteritis did better when potassium was given to them than when it was omitted from the treatment scheme. This was my impression, too, when treating babies suffering from diarrhoeal dehydration to which reference has already been made.

SCHEME OF TREATMENT

The care, management and feeding of the infants are detailed and the underlying principles of treatment are briefly discussed. Of the 200 cases in this series, only 34 were being partially breast-fed before the commencement of diarrhoea, but all had received either full feeds or complement of diluted cow's milk or reconstituted Nestlé's Powdered Milk of suitable strength for age and weight. Therapeutically, the same dried milk mixture was offered to all the infants but the cases were divided into two groups of 100 infants each. The babies in Group I were given at first glucose in water plus Darrow's Solution; those of Group II were used as controls as far as potassium was concerned and received glucose in water without potassium. The dried milk powder was added to these basic solutions. For convenience and simplification of treatment, Darrow's formula¹⁶ was concentrated to: sodium chloride 32 gm., potassium chloride 21.6 gm., sodium bicarbonate 35.2 gm., and water to 1 litre.

Treatment commenced with a 'fasting period' of 48 hours during which all feeds were withheld and the babies were given fluids only. The mothers were instructed to add two level teaspoons of glucose powder to each six ounces of boiled water; one teaspoon of the concentrated Darrow's Solution was added as well for the infants included under Group I of the treatment scheme.

Food was introduced on the third day. On the premise that milk of high fat content is likely to aggravate diarrhoea, a half-cream milk was preferred. In this instance, the powdered milk Dryco (The Borden Co.) was the preparation used. When reconstituted to full strength, Dryco contains 1.5% of fat and 5.7% of carbohydrate. By dissolving one level household teaspoon of this powder in one ounce of water, a mixture is obtained which corresponds approximately to two-thirds of full-strength Dryco. In other words, six level teaspoons of Dryco were dissolved in each six ounces of the glucose water, with or without the addition of Darrow's Concentrate. No further carbohydrate was added as the sugar content of the dried milk fortified by the glucose in the diluting fluid was considered sufficient. The milk mixture was not acidified. Each infant was allowed to take as much of the milk mixture as it desired to a maximum of six ounces per feed. Where the child had been partially breast-fed, it was first put to the breast and then the Dryco Mixture was given as complement in quantity corresponding to the artificial feed which it had received previously.

In actual practice, the scheme was further simplified. The mother was instructed to dissolve two level household

teaspoons of glucose powder (and one teaspoon of the Darrow's Solution if treated under Group I) in each cupful (approximately six ounces) of boiled water and to give the infant up to a cupful of this at four-hourly intervals, five times per day, for 48 hours. On the third day, six level teaspoons of Dryco powder were added to each cupful of the fluid, the child being allowed to drink as much as it wanted up to a cupful at a feed. Where mixed feeding was employed, the infant was first put to the breast and then given the Dryco mixture in quantity corresponding to the difference between the amount of milk taken at the breast and six ounces.

For the purpose of this investigation, cases showing no improvement within seven days from the commencement of therapy and cases which had deteriorated in that period were considered not to have benefited from the scheme of treatment. These 'failures' were put on sulpha drugs for the reason that Woodrow and Douglas-Henry,¹⁷ working with babies brought to the Aspeling Street and other Child Welfare Centres, found that this type of gastro-enteritis did well on sulphonamides. After the diarrhoea had ceased, the feeding formula was changed back to the original milk mixture in use before the stools had become loose.

Some pediatricians advocate an initial prolonged fasting stage when treating severe gastro-enteritis, with the object of putting the alimentary tract at rest by withholding feeds. Even mild gastro-enteritis is treated by giving fluid only 'until the stools improve' and then weak milk mixtures are offered. Recent literature indicates that a number of investigators support early feeding in the treatment of infantile gastro-enteritis. For example, Chung,¹⁸ with Viščrova,¹⁹ and Emmett Holt, Jr.,²⁰ recommend early oral feeding as a therapeutic measure, based on their findings that foodstuffs are absorbed even in the severest forms of diarrhoea and that the duration of the disease is shortened when full oral feedings are given throughout. It is interesting to note that Mitchell and his co-workers²¹ and also Prince and Bruce²² not only advocate early oral feeding but allow their infants to take as much skimmed milk as desired, a procedure parallel to that followed in the present treatment scheme.

Through many years of treating infantile diarrhoea my impression is that prolonged starvation of food lowers the infant's resistance and that therefore this procedure coupled with the use of weak milk mixtures is to be avoided (Emdin²³). As Gamble²⁴ points out, in diarrhoea there is a depletion of those food substances which sustain the energy metabolism. One has to be particularly careful to be explicit in one's instructions when advising uneducated and illiterate mothers, especially with regard to the period of food deprivation. It is by no means an unusual occurrence at hospital out-patient clinics to come across a moribund infant suffering from gastro-enteritis, the mother's story being that she had kept her baby solely on barley water or glucose water for several weeks in accordance with the doctor's instruction that the child was to be given fluids only until 'the motions become better'.

RESULTS OF TREATMENT

Table I summarizes the results of applying the present treatment scheme and emphasizes the difference in thera-

peutic response between the cases on glucose with Darrow's Solution (Group I), and those on glucose alone (Group II).

TABLE I

	<i>Stools</i>	<i>Group I (Potassium included)</i>	<i>Group II (Potassium omitted)</i>
A. Improved on:			
1st day	0	0
2nd day	36	24
3rd day	30	32
4th day	12	6
5th day	4	3
6th day	4	3
7th day	3	1
B. No improvement, or relapse within seven days	11	31
Total number of cases	..	100	100

It will be noted that where improvement occurred, the majority of cases in both groups showed betterment on the second or third days of treatment. There was, however, a distinct group difference as regards the percentage of unsatisfactory cases. The 'no-improvement and relapse' rate of infants on glucose (Group II) was almost three times that of the babies who were given glucose plus Darrow's Concentrate (Group I).

A study of the individual failures and their progress notes subsequent to the administration of sulpha drugs yielded information additional to the above. None of the unsatisfactory cases from Group I had to be hospitalized and all but one were cared for by the Medical and Nursing staff of the Aspeling Street Clinic until there was complete recovery from the ailment; the one exception was an infant taken over by a medical practitioner whom the parents of the child had consulted. Of the 31 failures from Group II, three deteriorated to an extent necessitating admission to hospital for further treatment. This is interesting, but in view of the home and other conditions and the small number of cases concerned, the conclusion that hospitalization could have been avoided had these infants received potassium in the first instance is hardly justified. The total number of failures in both groups combined is shown in Table I as 42 cases or 21%. It was found that following the administration of sulphonamides, rapid recovery occurred in all but four cases (2%).

On the whole, glucose-Darrow's solution was taken eagerly by the babies; in fact, most of them preferred this mixture to glucose alone. Further, the impression was that the infants on potassium exhibited a state of well-being superior to that shown when Darrow's solution was omitted from the treatment scheme. Although this paper deals with babies wholly or partially on artificial milk feeds, it may be mentioned in passing that while the present investigation was in progress a number of fully breast-fed babies with mild diarrhoea were given glucose-Darrow's solution for 48 hours after which the infants were put to the breast and received potassium chloride between feeds. The results of this procedure were compared with those obtained when glucose solution was substituted for glucose-Darrow's solution. Where potas-

sium was used, progress appeared to be more rapid and more satisfactory. These findings are parallel to those observed by several Medical and Nursing attendants at the Aspeling Street Centre and other Child Welfare Clinics.²³

SUMMARY AND CONCLUSIONS

Two hundred Cape Coloured infants suffering from acute but mild gastro-enteritis of recent origin were treated as ambulatory patients at an Infant Welfare Centre situated in a Cape Town slum area. Cognisance was taken of the illiteracy of most of the mothers attending the Clinic and their difficulties in carrying out treatment adequately because of adverse home conditions. A simple therapeutic scheme was therefore introduced, consisting of a short period of food deprivation during which glucose water was offered, followed by the use of a milk mixture of low fat content made up by adding a half-cream powdered milk ('Dryco' in this instance) to the glucose solution. Apart from observing the effects of these therapeutic measures, a further object of this investigation was an attempt to assess the value of using potassium in the treatment of mild infantile gastro-enteritis. For this reason the cases were divided into two groups of 100 infants each. Potassium chloride solution (Darrow's formula) was added to the glucose water and Dryco-glucose feeds which were given to one group, and was omitted from the treatment scheme of the second or control group. For the purpose of this investigation, cases which did not improve satisfactorily or relapsed within seven days from the commencement of treatment were considered not to have benefited from the therapeutic measures and these 'failures' were then given sulphonamides. Where possible, the progress of the patients on sulpha drugs was followed up.

It was found that the response to therapy was appreciably better with Darrow's solution than without it. There was recovery in 89% of cases with potassium as compared with 69% on glucose alone. The failure rate in the latter group of cases (31%) was almost three times that of the former group (11%). Further, the infants showed a distinct preference for the potassium-containing solution and feeds, and the general improvement was more rapid where potassium was given.

By the fourth day of treatment, the stools had become normal in approximately 89% of the cases which recovered, the majority of which (approximately 78%) improved on the second and third days, i.e. either while food was being withheld or on the first day of food re-introduction. This does not necessarily indicate that prolonged starvation would be advantageous, because subsequent improvement was maintained while food was being offered. An important finding was that the total number of failures fell from 21% to 2% after the administration of sulpha drugs.

From the above it would appear that potassium should be included in the treatment scheme, and where the stools do not improve within four days from the commencement of treatment or in the event of a relapse, the administration of sulphonamides is indicated.

I wish to thank Dr. F. O. Fehrsen, Medical Officer of Health, Cape Town, for permission to publish this paper, and Dr. E. Mary Broome, for the facilities which were placed at my disposal.

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ABSTRACTS

G. R. Herrmann and M. R. Heitmancik. *A Clinical Electrocardiographic Study of Paroxysmal Ventricular Tachycardia and its Management*. Ann. Int. Med. (1948); **28**, 989-997.

Paroxysmal ventricular tachycardia is a relatively rare but serious increase in heart-rate originating in a temporary abnormal pacemaker in ischemic and damaged ventricular tissues. Most hearts in which abnormally augmented heart action develops in the ventricular muscle are those that have been previously damaged by circumscribed infarction, diffuse fibrosis, or digitalis poisoning. It is important to recognize and interrupt the rapid heart action promptly because the added strain will cause acute cardiac failure if it is allowed to continue. Furthermore, ventricular tachycardia may be the immediate precursor of ventricular fibrillation. Myocardial infarction and toxicity from digitalis are generally considered the most common precipitating causes.

The interest of authors in paroxysmal tachycardia has recently been stimulated by the development of more promising methods of treatment, emergency situations, and of subsequent management aimed at prevention of recurrences of the paroxysms. The patients were studied in the Cardiovascular Service of the University of Texas.

A series of 20 cases of paroxysmal ventricular tachycardia has been analysed. The average age of the patients was 52.8 years, the youngest being 18 and the oldest 80. Thirteen were between the ages of 45 and 65. There were 17 men and three women.

Coronary artery disease was present in 70% of cases. Hypertension was present in six patients with coronary disease; digitalis toxicity in seven cases, fifteen of the cases were associated with signs of congestive failure. The rates of the tachycardia varied between 110 and 220, with an average of 170. No correlation was observed between rate and prognosis. In three of the four patients receiving no specific therapy, the disorder persisted until death. Ten cases reverted on oral quinidine, the amount required varying greatly: from 0.6 gm. to 5.2 gm. in 24 hours. The average was 1.5 gm.

Patients in critical condition were given intravenous quinidine sulphate up till 3.3 gm. daily by slow intravenous drip.

After reversion of the tachycardia 12 patients were maintained on quinidine sulphate orally, in doses of from 0.6 to 1.0 gm. daily. One of these patients has been maintained on quinidine for six years without toxic or harmful effect and without recurrence since the first year. In 10 cases paroxysmal tachycardia did not recur on this maintenance regime.

In spite of reversion to normal rhythm and prevention of recurrence, the degree of underlying myocardial damage is

frequently so severe that prolongation of life is only of short duration.

The authors conclude that with oral or intravenous quinidine paroxysmal ventricular tachycardia can be reverted to a normal rhythm. Maintenance doses of quinidine after reversion to normal rhythm are almost imperative as long as excess irritability of the myocardium exists.

Safety and Effectiveness of Multiple Antigen Preparations in a Group of Free-Living Children. V. K. Volk: Amer. J. Public Health (1949); **39**, pp. 1299-1313; Amer. J. Hygiene (1948); **47**, pp. 53-63.

The effectiveness of many immunizing agents and the apparent trend towards combining two or more antigens suggested the need for a careful study of multiple immunization from the standpoint of safety, frequency or reactions, and effectiveness. In June 1943 a study was undertaken to determine the safety and effectiveness of immunization with various multiple antigen preparations. The results were obtained in free-living schoolchildren, none of whom by history had received active artificial stimulation by injection of antigens.

The author deals with the effectiveness of multiple antigen preparations containing diphtheria, tetanus and pertussis antigens, as indicated by the height and duration of diphtheria and tetanus antitoxin response according to blood titrations, by the protection secured against whooping cough as measured by the agglutination test and by the results of an epidemiological survey.

The antigenic response to the diphtheria, tetanus and pertussis antigens contained in one injection of a multiple antigen preparation, was not great, the children having less than 0.001 unit of diphtheria antitoxin and less than 0.02 unit of tetanus antitoxin at the time of the first injection, and at least 5,000 million pertussis organisms.

A multiple antigen preparation containing 15,000 million pertussis organisms per injection appeared to be more effective than one containing 5,000 million pertussis organisms.

Physicians should be made aware that one injection is inadequate, every effort should be made to give each child at least two, but preferably three injections of combined antigens. It is advisable to give a booster dose about two to three years after the initial inoculation.

The author recommends that the injections of multiple antigen preparations should be given intramuscularly because the development of antigenic cysts is greatly lessened by using this route of injection.

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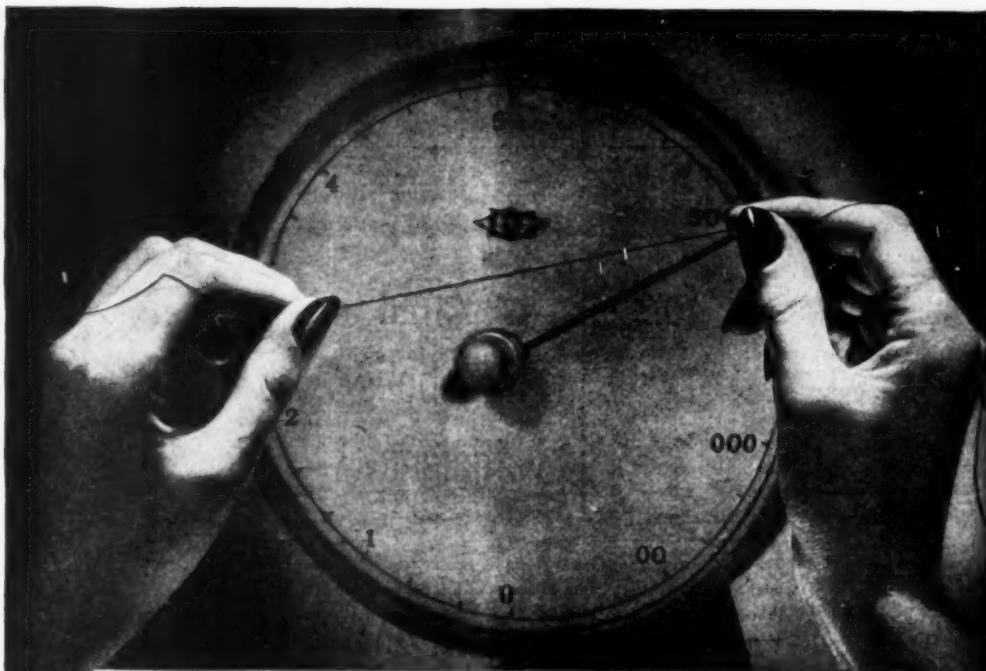
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VAN DIE REDAKSIE

DIE DIAGNOSE VAN HIPERTENSIE-SIEKTE

Daar bestaan vandag 'n wydverspreide vrees vir hypertensie. Baie mense is onnodig bevrees oor hulle lot gemaak omdat 'n geneesheer aan hulle gesê het dat hulle bloeddruk verhoog is.

Van al die hartbloedvatkwale word hypertensie-siekte die meeste gediagnoseer,¹ dog op weinige gebiede van praktyk faal ons so erg soos by die hantering van hierdie siektetoestand. Dit word nie slegs meer dikwels as wat regverdigbaar is gediagnoseer nie,² maar ongelukkig word besorgheid en vrees maar te dikwels veroorsaak wanneer die diagnose gemaak word.

Wanneer ly 'n patiënt aan hypertensie-siekte? Talryke veranderinge van sienswyse oor wat normale bloeddruk is, het in die afgelope jare voorgekom. Op een tydstip is dit beskou as .100 + die ouderdom van die persoon'. Daarna is daar gemeen dat bloeddruk met volwassenheid konstant word en dat enige verdere styling patologies is. Tot onlangs is daar gemeen dat dit abnormal is vir die sistoliese druk om bo 140 mm. Hg en vir die diastoliese druk om bo 90 mm. Hg te styg. Hierdie syfers word inderdaad in die jongste en onder die beste boeke oor kardiologie aangegee. Daar is besef dat fisiologiese vatvernouing wat aan emosie, koue en ander beuselagtige oorsake te wye is, dikwels voorkom en die bloeddruk verhoog. Dat 'n bloeddruk van die klas 160/90 mm. Hg toevallig voorkom, het gevoldigkun in sy betekenis verloor. Daarneoor sê Evans³ in sy boek *Cardiology* wat in 1948 gepubliseer is, dat 'n persoon aan hypertensie ly indien met toegeende liggaamlike en verstandelike ontspanning die sistoliese druk by drie agtereenvolgende lesings bo 180 mm. Hg en die diastoliese druk bo 110 mm. Hg is.

Die waarheid lê waarskynlik tussen hierdie verskillende menings. Indien Wood se syfers aanvaar word,⁴ sal uiters baie persone oor 45 as hypertensielyers beskou moet word. Selfs indien daar gemeen word dat Evans sy saak te sterk gestel het, sou dit verstandig wees om na te dink oor die rede wat hom dit laat doen het, klaarblyklik 'n poging om dit sterk gety van verkeerde diagnose en swak behandeling te keer wat in hierdie gebied van praktyk voorkom.

Daar is nie so iets soos 'n konstante bloeddruk nie; om hierdie rede is dit gebruiklik om verskeie man-

EDITORIAL

THE DIAGNOSIS OF HYPERTENSIVE DISEASE

Today fear of hypertension is widespread. Many have been made excessively anxious of their fate because a medical practitioner has told them that their blood pressure is raised.

Of all the cardiovascular disorders, hypertensive disease is the most commonly diagnosed,¹ yet in few fields of practice do we fail so badly as in the handling of this condition. Not only is it diagnosed more often than is justified,² but unfortunately anxiety and fear are only too often engendered when the diagnosis is made.

When has a patient got hypertensive disease? Numerous changes in outlook have occurred in recent years about the normal blood pressure. At one time this was considered to be 'the subject's age + 100'. Next it was believed that the blood pressure stabilizes when maturity is reached, and that any further elevation is pathological. Not so long ago it was considered abnormal for the systolic pressure to be elevated above 140 mm. Hg and the diastolic pressure above 90 mm. Hg. In point of fact, these are the figures given in the most recent, and among the best books on cardiology. It was realized that physiological vasoconstriction, due to emotion, cold and other trivial factors, occurs commonly and raises the blood pressure. The casual finding of a blood pressure of the order 160/90 mm. Hg consequently lost much of its significance. On the other hand, in his book *Cardiology*, published in 1948, Evans³ states that a person has hypertension if on three consecutive readings, when adequate bodily and mental relaxation has been obtained, the systolic pressure is above 180 mm. Hg and the diastolic pressure above 110 mm. Hg.

The truth probably lies between these differing views. If Wood's figures are accepted,⁴ very many persons over 45 years would have to be regarded as hypertensive. Even if Evans is believed to have overstated his case, it would be wise to consider what prompted him to do so—manifestly an attempt to stem the strong tide of misdiagnosis and bad treatment which prevails in this field of practice.

There is no such thing as a constant blood pressure; for

1. White, P. D. (1948): *Heart Disease*. New York: Macmillan Mky.
2. Master, A. M. et al. (1950): J. Amer. Med. Assoc., **143**, 1464.
3. Evans, W. (1948): *Cardiology*. London: Butterworth and Kie.
4. Wood, P. (1950): *Diseases of the Heart and Circulation*. London: Eyre and Spottiswoode.

metriese lesings op 'n keer te doen. Dit is lank reeds bekend dat emosionele faktore die bloeddruk laat styg en in die meeste gevalle is 'n mediese ondersoek om hierdie rede alleen genoegsame oorsaak vir 'n verhoogde bloeddruk. Daar word nie deeglik genoeg besef nie dat perifere vaatvernouing weens emosionele oorsake ook die diastoliese druk selfs tot bo die peil van 110 mm. Hg kan verhoog. Daar is geen waarborg dat toereikende ontspanning noodwendig ten tyde van die tweede of derde lesing verky is nie. Daarbenewens kan die tweede of derde lesings deur die pasiënt beskou word as 'n aanduiding dat die geneesheer deur die eerste lesing ontsel is. Enige onversigtige woord of gebaar kan in werklikheid die pasiënt se besorgdheid laat toeneem.

Evans maak die belangrike bewering dat voordat hypertensiesiekte gediagnoseer word, daar bewys van vergroting van die hartbloedvatstelsel moet wees. Dit is onwaarskynlik dat 'n pasiënt lank aan hypertensie van 'n ernstige aard sal ly en nie tekens van stremming van die bloedsoolloopstelsel vertoon nie. Die peripherie slagare kan verdik word of netvlies-slagare kan deur 'n oogspiegel soos silwerdraade vertoon en vergroting van die hart mag voorkom. As gevolg van die feit dat die niere ingee, kan die urine van die pasiënt 'n lae soortelike gewig hê, in stygende hoeveelhede ontlas word en rooi bloedselle bevat.

'n Behoorlike waardebepaling van die sogenaamde sistoliese hypertensie wat voortvloei uit veranderinge van die hoofslagaaar as gevolg van vervoetting en met verlies van sy rekbaarheid, moet ook gedaan word.

Met die toepassing van verbeterde maatstawe sal baie persone wat na veronderstel word aan hypertensiesiekte ly, van die diagnose bevry word. Indien die pasiënt klaarblyklik aan hypertensie ly, is dit moeilik om in te sien wat hereik kan word deur hom die vrees in te boesem dat hy 'n ongeluk kan verwag en hom te laat glo dat hy enige oomblik 'n beroerte-aanval of 'n verstopping van die kraanslagaaar kan kry. Talyke persone met 'n hoge bloeddruk leef tot 'n hoge ouderdom⁵; en om met kort tussenposes op die bloeddruk 'n oogje te hou kan ook geen goeie gevolge hê nie. Totdat die geneesheer in staat is om doeltreffende behandeling teen hypertensie te bied, sal hy in die beste belang van sy pasiënt handel deur maatreëls te vermy wat tot besorgdheid kan bydra.

5. Bechgaard, P. (1946): Acta. Med. Scandinav., Supp. No. 172.
3.

in this reason it is customary to take several manometric readings at a session. It has long been known that emotional factors elevate the blood pressure, and in the majority of cases a medical examination is adequate cause for a raised blood pressure on this account alone. It is not sufficiently realized that peripheral vasoconstriction from emotional causes can elevate the diastolic pressure as well, even to the level of 110 mm. Hg. There is no guarantee that adequate relaxation will necessarily have been obtained at the time of the second or third reading. Furthermore, the taking of the pressure readings a second or third time may be regarded by the patient as an indication that the doctor has been perturbed by the first reading. Any incautious word or gesture may actually serve to increase the patient's anxiety.

Evans makes the important point that before hypertensive disease is diagnosed, there should be evidence of cardiovascular hypertrophy. It is unlikely that a patient will have prolonged hypertension of any severity and not have evidence of strain on the circulatory system. The radial arteries may be thickened, on ophthalmoscopy silver-wiring of the retinal vessels may be seen and cardiac hypertrophy may be present. As a result of renal failure, the patient's urine may be of low specific gravity, excreted in increasing amounts and contain red blood cells.

Proper evaluation should also be made of the so-called systolic hypertension which results from atherosomatous changes in the aorta with loss of its elasticity.

With the application of improved criteria, many persons presumed to have hypertensive disease will be released from the diagnosis. If the patient clearly has hypertension, it is difficult to see what purpose can be served by alarming him into expectation of misfortune, causing him to believe that he may at any moment suffer a stroke or a coronary thrombosis. Numerous persons with a high blood pressure live to old age⁶, nor can any good result from 'keeping an eye' on the blood pressure at frequent intervals. Until the medical practitioner is in the position to offer an effective therapy for hypertension, he can best serve his patient by avoiding any measures which may contribute to anxiety.

5. Bechgaard, P. (1946): Acta. Med. Scandinav., Supp. No. 172.
3.

THE GENERALIZED DEVELOPMENTAL OSSEOUS DYSTROPHIES

INTRODUCTORY CLASSIFICATION

I. MULTIPLE EXOSTOSES

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The generalized developmental bony dystrophies, many of which are hereditary, present considerable difficulty in their clinical assessment and understanding. This predicament is fostered not so much by inherent intricacies as by the accumulated clap-trap of philological

invention. The multiplicity of names given to each condition is of little distinguishing value, and speaks of our ignorance of their origins. From titles alone who could distinguish between achondroplasia, dyschondroplasia, chondrodysplasia, chondrodytrophy, chondro-

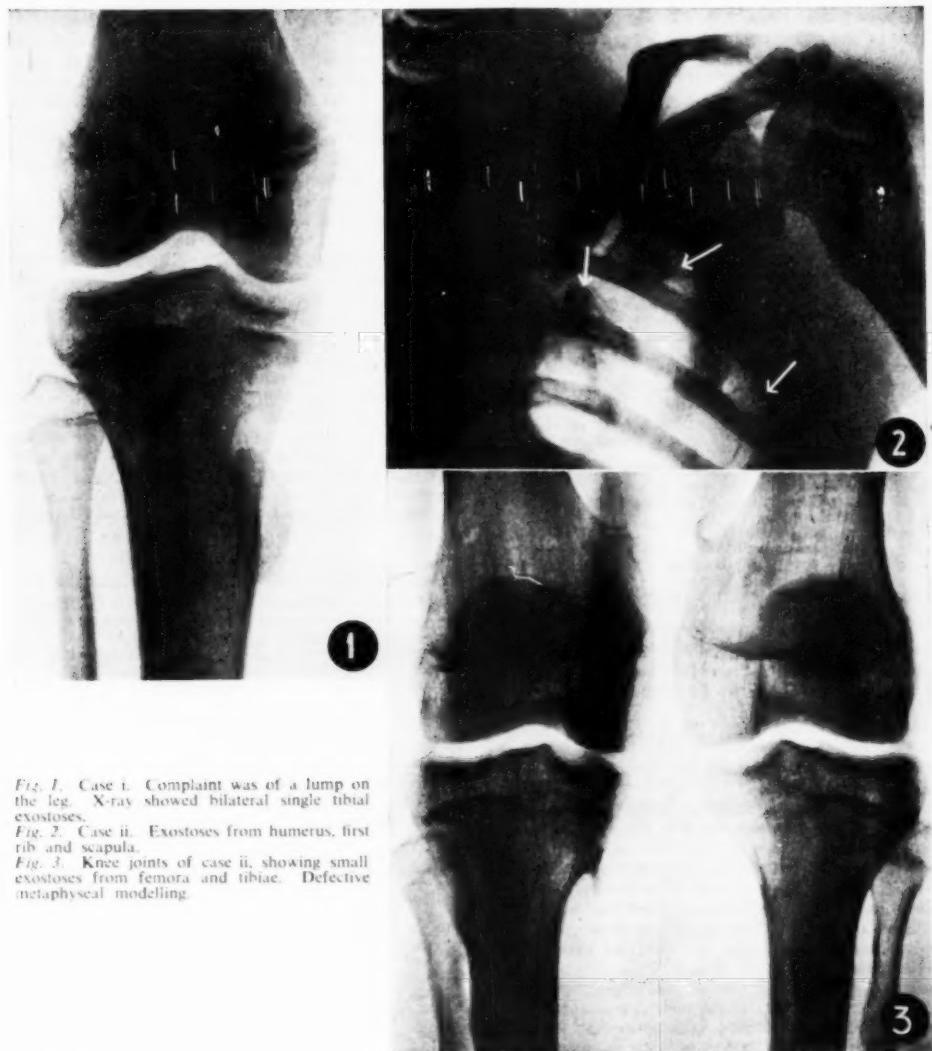


Fig. 1. Case i. Complaint was of a lump on the leg. X-ray showed bilateral single tibial exostoses.

Fig. 2. Case ii. Exostoses from humerus, first rib and scapula.

Fig. 3. Knee joints of case ii, showing small exostoses from femora and tibiae. Defective metaphyscal modelling.

osteodystrophy, chondrodystrophia ossificans, chondrodystrophia calcificans congenita, osteogenesis imperfecta, dysostosis multiplex, mutational dysostosis, periosteal dysplasia, diaphyseal dysplasia, osteopathyrosis, melorheostosis, and osteochondropathia?

Furthermore, there are many cases, often several in one

family, which do not fit into any of the recognized syndromes. These oddities are frequently afforded fancy names, instead of being recognized as irregular dystrophies, the result of genetic shuffle in the particular families.

In drawing up a tentative classification of the bony dystrophies, it may, in certain cases, be better to continue

the use of eponyms rather than names which, attempting to be scientifically descriptive, might equally well apply to four or five other conditions.

CLASSIFICATION

Cartilaginous Defect (affecting cartilage bone only).

1. Diaphyseal only (displaced islands of cartilage cells).
- Multiple enchondromatosis (type Ollier).
- Multiple exostoses (type Keith).
- Mixed, incomplete, and intermediate (?) types.
2. Epiphyseal only.
- Multiple epiphyseal dysplasia (type Fairbank I).
- Stippled epiphyses (type Fairbank II).
- Intermediate types.
3. Whole bone (diaphysis and epiphysis affected).
- Achondroplasia (type Parrot).
- Atypical achondroplasias (e.g. unilateral, types with normal skull, recessive inheritance, the Ellis-van Creveld syndrome).
- Type Morquio (all degrees of severity).
- Gargoylism (type Hunter-Hurler).
- Incomplete syndromes.
- Intermediate and irregular forms.
- Defects in Ossification* (affecting cartilage and membrane bone).
1. Osteogenesis Imperfecta (type Vrolik, early, and Lobstein, late).
- Atypical forms (unilateral, cystic, etc.)
2. Increased Bone Density (?) deficient osteoclastic activity).
- Osteopetrosis (Albers-Schonberg type I).
- Spotted bones (osteopoikilosis, Albers-Schonberg II).
- Type Léri (melorheostosis).
- Osteostrata (type Voorhoeve).
- Irregular and intermediate forms.
3. Osteodental Dysplasia (Jackson 1951; 'cleido-cranial dysostosis', type Marie and Sainton).
- Partial cases (including 'peripheral dysostosis'—Brailsford, 1945;
- 'Cleidal dysostosis'—Baer 1948).

It is intended to illustrate some of the abovementioned conditions by reports of cases and families all of which have been seen at Groote Schuur Hospital during the past year.

1. MULTIPLE EXOSTOSES

Keith 1919. (Diaphyseal aclasis, hereditary deforming chondrodysplasia.)

Essential Condition. Multiple symmetrical cancellous exostoses occur mainly from the metaphyses of long bones. Almost all other bones of the body may be affected (Fig. 2 shows small outgrowths from bones of the shoulder girdle). Exostoses never appear from the epiphyses.

Inheritance. The condition is inherited as a complete Mendelian dominant. That is to say it is passed on equally by an affected mother or father and affects about half the children.

Pathology. Small islands of developing epiphyseal cartilage become isolated at the metaphyseal surface and later grow and ossify. At the same time these abnormal cartilaginous rests prevent the periosteum from fashioning the metaphysis in an orderly manner, so producing distortion of bone ends and irregularity in density of calcification.

Relation to Single Osteoma. It has been mooted that the single osteoma, even the ivory osteoma of the skull, may be an incomplete form of Keith's disease. In affected families the number of exostoses in individual members varies from one to thousands, and it may be difficult to

prove that an isolated osteoma in one person is not in truth a member of a much larger family group!

Symptoms. Usually there are no symptoms. Exostoses may interfere with the functioning of tendons, muscles, blood vessels or nerves. The presence of a 'lump', deformity of the forearm, stunted growth and dislocation may be complained of.

Associated features. The following may be present: dwarfing; inequality of limb growth; shortening of the ulna, with bowed radius.

X-ray Appearance. The sessile ossified excrescences usually tail off to a sharp end pointing towards the centre of the bone. They may be irregular in shape. The adjacent metaphysis is bulged and there may be areas of lessened density in it (Fig. 3), which are sometimes mistaken for enchondromata.

Distinction from 'Enchondromatosis' (Ollier 1899). The confusion wrought by polysyllabic multiple nomenclature is well shown by reference to the literature on these two readily separated and distinct conditions, multiple exostoses and multiple enchondromata. The following terms are used indiscriminately for one or other or both conditions: multiple cartilaginous exostoses, multiple congenital osteochondromata, hereditary deforming chondrodysplasia, diaphyseal aclasis, and dyschondroplasia.

Differentiation of the two conditions is shown in Table I.

TABLE I

	Multiple Exostoses	Multiple Enchondromata
Inheritance Character	Complete dominant	Nil
	Excrescences from bone surface	Expansion from bony interior
Symmetry	Typically symmetrical	Asymmetrical (largely unilateral)
Disability	Slight	Often crippling deformity of hands
Special features	Short ulna	Hæmangiomas

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ARCHIVES FOR A HISTORY OF MEDICINE IN SOUTH AFRICA
From the South African Medical Journal 1886
ANNOTATIONS

Our contemporary, the *Free State Express*, tells us that great changes have taken place in the medical fraternity of Kimberley, a number of the older hands being elbowed out by younger and presumably abler men. Whilst usually regretting the peripatetic character of the South African doctor, we are inclined to be glad of it in this case.

The old generation of Kimberley doctors 'never would be missed, never would be missed', and the sooner they are improved off the face of the earth the better. With a few honourable exceptions, their homes were bars, their principal occupation swearing and gambling and their main claim to professional success an unlimited capacity for advertising themselves and slandering their confrères (21 July 1886, p. 11).

* * * *

One of our King Williamstown brethren will eventually be *doyen* of the faculty if advertising is a passport thereto (21 July 1886, p. 12).

* * * *

The *Kaffrarian Watchman* says that a native woman at Brownlee's Station, near King Williamstown has given birth to twins, one being white, with the hair and features of an European, and the other black, with the woolly hair and features of a Kafir. Query? Is this supererogation? Will some of the King Williamstown brethren look into the case? (28 July 1886, p. 14).

* * * *

Mr. Advocate Esselen, who by dint of accurately gauged politics has just been appointed a puisne judge in the Transvaal, was at one time a student of medicine at Edinburgh and served as a 'surgeon' to the Transvaalers in the war of 1880. With commendable wisdom, he abandoned medicine for law. Medicine has no 'plums' to pick, and does not fit in with politics

* * * *

We understand that the Eastern Province Medical Association is not now connected with the South African Medical Association. This we consider a pity, as union is strength, but doubtless there are good reasons for the junior association steering a separate course. We have all along thought it best for local medical associations in this country to affiliate to the British Medical Association, as our brethren in Australia and India do.

* * * *

One of the results of the present 'Gold' rush, should be to relieve the Colony of its present plethora of medical

men, altogether in excess of the means of subsistence. It ought to be well worth while for young men without encumbrance, to try their luck at the Gold Fields. About Barberton and the district there is now a large and rapidly increasing population, and this should require medical attention. We do not hear of many men having already gone (4 August 1886, p. 20).

* * * *

In the Diamond Field press we find, to our disgust, the name of Dr. Smith as officiating as referee in a so-called 'glove-fight' at Kimberley. The exhibition is described by our Diamond Field contemporaries as 'disgusting' (11 August 1886, p. 24).

* * * *

Dr. Smart, of Britstown, is a very admirable and energetic man, and withal a very successful farmer. He lately scored very greatly by securing an abnormally high price for wool on the Port Elizabeth market.

At a meeting of farmers in his district, an unbelieving individual named Badenhorst opined that the acarus of the sheep could be spontaneously generated by poverty of blood. Dr. Smart forthwith non-plussed him by asking if he thought he came into the world without father or mother. An apt way of bringing reason down to the dull obstinacy of ignorance!

One redeeming feature of the miserable position of medical practice in this country is that it brings a certain amount of intelligence to other colonial pursuits which sorely need that quality

* * * *

The English general practitioner is at loggerheads with the consultant, who he says absorbs his patients. An association has been formed to combat this style of thing (11 August 1886, p. 28).

Correspondence

4 August 1886, p. 18

Sir, Can any one tell me what is the usual rate of charging when one prescribes for a patient in the country, on the description of the case by a friend? Most of my prescriptions are written without seeing the patient and I do not know quite how to charge.

Yours very truly,
A Junior District Surgeon.

STERILIZATION OF SEWAGE SLUDGES

INCIDENCE AND RELATIVE VIABILITY OF ASCARIS OVA AT SEWAGE DISPOSAL WORKS IN THE JOHANNESBURG AREA

P. KELLER and C. G. HIDE

Water Treatment Research Division, National Chemical Research Laboratory, S.A. Council for Scientific and Industrial Research

INTRODUCTION

In the course of earlier investigations¹ of methods which might be applicable to the sterilization of sewage sludges, a number of data have been accumulated concerning the incidence of Ascaris ova at various Johannesburg sewage disposal works. The findings are limited to the ova of *Ascaris lumbricoides* which served as an index organism in the actual experimental work on the sterilization of sewage sludges. On the other hand, the results presented serve as an indication of the extent of ascariasis in Johannesburg. The figures do not so much represent the actual or potential infectivity of sewage sludges, but indicate the severity of infestation with *Ascaris lumbricoides*, probably mainly amongst the Native population.

INCIDENCE OF ASCARIS OVA IN SEWAGE

TABLE I: AVERAGE FIGURES FOR INCIDENCE OF ASCARIS OVA AT VARIOUS JOHANNESBURG SEWAGE DISPOSAL WORKS

Raw sludge:	Cyndra	50 ova per ml.	12 samples studied
	Bruma	62	4
	Klipspruit	243	4
Digested sludge:	Cyndra	105 ova per ml.	12 samples studied
	Bruma	148	8
	Klipspruit	552	10

From the figures given in the tables it appears that on the average the egg count for sewage and sewage sludges remains fairly constant, and that therefore the degree of infestation with Ascaris in the various areas is fairly constant and apparently normal. Table I gives the average number of Ascaris ova per ml. of raw and digested sewage sludges from various Johannesburg sewage disposal works. The data from which these average figures have been derived are presented in Tables II, III and IV. The higher egg counts of digested sludges may be interpreted with confidence as resulting directly from the destruction of associated organic matter in the digestion process. This statement could only be proved conclusively if it were possible to follow a given quantity of raw sewage from its arrival at the disposal works right through all stages of its treatment for disposal until it is discharged on to drying beds as digested sludge. It is implied in the nature of the process, however, that the sludge is concentrated, that organic material is decomposed and converted to methane and carbon dioxide, and that the moisture content of the sludge is decreased. It is but logical, therefore, that the number of Ascaris ova per ml. of sludge should increase proportionately in the process since the ova remain intact.

TABLE II: MOISTURE DETERMINATIONS AND EGG COUNTS ON SLUDGES FROM CYDNA SEWAGE DISPOSAL WORKS, JOHANNESBURG

Type of sludge	Date	Moisture concentration %	Total solids %	Ova/g. dry	Ova/ml. sludge
Raw	7/12/49	96.60	3.40	1,100	39
Raw	7/12/49	96.60	3.40	1,233	39
Raw	21/12/49	95.49	4.51	973	44
Raw	21/12/49	95.49	4.51	964	44
Raw	4/1/50	94.80	5.20	1,417	62
Raw	12/2/50	95.64	4.36	826	43
Raw	1/3/50	95.53	4.47	986	44
Raw	19/3/50	96.20	3.80	1,289	49
Raw	17/3/50	98.12	1.88	2,925	55
Raw	23/3/50	96.07	3.93	1,628	64
Raw	4/5/50	97.04	2.96	2,204	65
Raw	11/5/50	97.90	2.10	1,955	40
Digested	17/1/50	96.55	3.45	2,240	77
Digested	17/2/50	94.78	5.22	1,594	83
Digested	1/3/50	92.29	7.71	2,237	172
Digested	9/3/50	93.84	6.16	1,461	90
Digested	17/3/50	95.64	4.36	2,500	109
Digested	23/3/50	91.56	8.44	1,136	96
Primary digested	3/5/50	94.42	5.58	1,774	99
Secondary digested	5/5/50	95.44	4.56	1,940	89
Primary digested	12/5/50	95.79	4.21	3,111	131
Secondary digested	15/5/50	94.54	5.46	1,900	104
Dried	20/1/50	22.77	77.23	1,710	1,282 per gram wet
Dried	20/1/50	22.77	77.23	1,610	1,282 per gram wet

TABLE III: MOISTURE DETERMINATIONS AND EGG COUNTS ON SLUDGES FROM BRUMA SEWAGE DISPOSAL WORKS, JOHANNESBURG

Type of sludge	Date	Moisture concentration %	Total solids %	Ova/g. dry	Ova/ml. sludge
Raw	23/3/50	96.19	3.81	1,364	52
Raw	31/3/50	93.57	6.43	979	63
Raw	11/4/50	95.66	4.34	1,728	75
Raw	12/5/50	94.88	5.12	1,230	63
Primary digester	23/3/50	99.08	0.92	1,686	16
supernatant liquor	31/3/50	99.05	0.95	2,210	21
"	11/4/50	98.87	1.13	3,053	34
"	12/5/50	98.63	1.37	2,576	35
Primary digested	23/3/50	87.74	12.26	959	118
"	31/3/50	93.46	6.54	749	49 (?)
"	11/4/50	95.12	4.88	2,736	134
"	12/5/50	91.07	8.93	1,600	143
Secondary digested	23/3/50	80.20	19.80	1,428	283
"	31/3/50	95.90	4.10	2,707	111
"	11/4/50	96.04	3.96	3,977	158
"	12/5/50	96.15	3.85	5,064	195
Dried sludge	11/4/50	60.43	39.57	773	304 wet
"	12/5/50	85.05	14.95	1,631	241 wet



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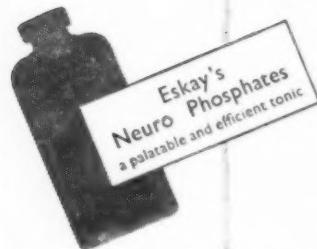
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TABLE IV: MOISTURE DETERMINATIONS AND EGG COUNTS ON SLUDGES FROM KLIPSpruit SEWAGE DISPOSAL WORKS, JOHANNESBURG

Type of sludge	Date	Moisture concentration	Total solids	Ova g. dry	Ova ml. sludge
Incoming crude sewage	21/8/50	—	0.0863	1,200–1,200/litre	
Raw sludge	21/8/50	96.40	3.60	7,805	281
Raw sludge	1.9.50	90.08	9.92	2,590	257
Raw sludge	5.10.50	93.48	6.52	2,800	183
Primary digester supernatant liquor	21.8.50	98.65	1.35	3,819	55
Primary digested sludge	21.8.50	95.68	4.32	3,912	163
Digested sludge after 1 day's drying	1.9.50	85.49	14.51	4,162	604
" " 2 days' drying	21.8.50	68.53	31.47	1,538	584
" " 3 "	26.9.50	83.00	17.00	3,241	551
" " 6 "	1.9.50	84.60	15.40	4,564	703
" " 7 "	26.9.50	82.48	17.52	2,248	394
" " 12 "	26.9.50	81.25	18.75	2,864	532
" " 13 "	26.9.50	81.99	18.01	2,887	520
" " 42 "	21.8.50	52.25	47.75	1,907	911
Dried sludge	5.10.50	4.31	95.69	no viable ova	

The figures given in Tables II, III and IV may be low owing to experimental error, but they are definitely not high.

The number of Ascaris ova in Klipspruit sludges was found to be consistently much higher than in sludges from Cydna and Bruma disposal works. Whereas Cydna receives almost only domestic sewage, and Bruma receives domestic sewage and a certain proportion of industrial waste effluents, the Klipspruit disposal works receive, apart from domestic sewage, effluents and industrial waste, the waste from the Johannesburg abattoirs and nightsoil from latrines and buckets at the Western Native townships. It therefore appeared advisable to examine abattoir wastes and nightsoil separately, i.e. before they were discharged into the sewer, or mixed with incoming crude sewage respectively.

Officials at the Johannesburg abattoirs were approached and the following information was obtained. A severe infestation with Ascaris as well as with other intestinal parasites is found in practically all pigs slaughtered at the Johannesburg abattoirs, with the exception of 'baconers' which are, as a rule, brought up under conditions which eliminate the risk of infection with Ascaris from the very beginning.

No figures could be supplied as to the exact extent of Ascariasis in pigs; the intestines of slaughtered animals are sold as offal and usually treated and washed by the buying firms; the waste, however, is discharged into the sewers leading to Klipspruit disposal works.

Snap samples taken at random from the intestinal contents of slaughtered pigs were examined for Ascaris ova; in one set of four samples one sample was found

TABLE V: RESULTS OF CHEMICAL ANALYSIS OF SEWAGE, SEWAGE SLUDGE AND EFFLUENT SAMPLES FROM VARIOUS JOHANNESBURG SEWAGE DISPOSAL WORKS

No.	Description and origin	Total solids, g./l.	Loss on ignition, g./l.	Carbon, g./l.	Total nitrogen, g./l.	Ammonia nitrogen, mg./l.	O ₂ from Parts per K ₂ MnO ₄ , 100,000	
							4 Hours	3 Mins.
1. Crude sewage, Klipspruit	...	0.86	—	0.198	0.07	91	32	6
2. Crude sewage, Delta	...	0.89	—	0.72	0.183	105	52	5
3. Raw sludge, Klipspruit	...	36.0	28.4	18.03	1.99	98	436	130
4. Raw sludge, Delta	...	18.2	—	10.86	1.121	147	240	53
5. Raw sludge, Cydna	...	38.6	32.6	19.1	1.55	115	—	—
6. Primary digested sludge, Klipspruit	...	43.2	31.0	18.48	2.26	535	520	134
7. Primary digested sludge, Cydna	...	61.48	33.87	16.80	2.27	360	—	—
8. Primary digested sludge, Bruma	...	16.6	9.95	6.78	1.45	500	—	—
9. Primary digester supernatant liquor, Klipspruit	...	14.4	9.6	7.68	1.56	810	260	112
10. Secondary digested sludge, Cydna	...	61.55	29.88	12.24	2.38	273	—	—
11. Secondary digested sludge, Bruma	...	39.79	23.65	15.48	1.82	626	—	—
12. Secondary digested sludge, Delta	...	112.8	—	36.3	5.56	945	1,840	335
13. Secondary digester supernatant liquor, Delta	...	38.2	—	7.25	2.034	492	372	87
14. Drying digested sludge, Klipspruit	...	314.7	214.7	47.55	2.10	1,228	1,130	315
15. Drying digested sludge, Klipspruit	...	477.5	307.5	70.50	4.55	1,137	1,940	775
16. Drying digested sludge, Delta	...	178.3	—	53.10	6.45	1,245	1,820	540
17. Activated sludge, Delta	...	1.39	—	1.12	0.175	37.6	12	5
18. Final activated sludge, Delta	...	3.6	—	1.56	0.350	17.5	52	6
19. Tank effluent, Olfantsvlei	...	1.2	—	0.78	0.07	28.0	20	3
20. As before, after standing	...	1.0	—	0.65	0.084	73.0	16	2
21. As before, run-off Olfantsvlei	...	0.6	—	0.06	0.035	17.0	10	1
22. Experimental thermophilic sludge	...	294.0	157.2	9.71	1.86	784	—	—

to be positive for *Ascaris* and *Trichuris* ova, two samples were positive for *Ascaris* ova only, and one sample was negative. The results from other sets of samples were similar.

The District Meat Officer supplied the following figures: 118,039 pigs were slaughtered at the Johannesburg abattoirs during the period from 1 April to 30 September 1950. Of this number, 36,052 were baconers which can be disregarded as contributors of *Ascaris* ova to Klipspruit sewage. On the average, 547 *Ascaris*-infected pigs were slaughtered per day. It is doubtful whether the intestinal contents of this number of pigs would make a really appreciable difference in the load of *Ascaris* ova in Klipspruit sewage.

Samples of nightsoil were obtained from the collecting tank wagons and were examined; their contents of *Ascaris* ova varied from 104 ova per ml. to 403 ova per ml. of the liquid mixture, or from 5,745 ova per gm. of dry solids to approximately 27,000 ova per gm. of dry solids. The samples came from pit latrines at Moroka Township and from the bucket service for Orlando Township. It may be that some of the samples examined were not representative samples, owing to insufficient mixing, but even then it appears safe to assume that the high incidence of *Ascariasis* in the Native population is in part at least responsible for the high number of *Ascaris* ova in Klipspruit sewage.

CHEMICAL ANALYSIS OF SEWAGE AND SEWAGE SLUDGES

Table V presents the results of chemical analysis of sewage, sewage sludges and effluents from various Johannesburg disposal works. These data are included for the sake of completeness, and they require no comment.

RELATIVE VIABILITY OF ASCARIS OVA FROM SEWAGE

TABLE VI: AVERAGE RELATIVE VIABILITY OF ASCARIS OVA IN VARIOUS TYPES OF SEWAGE SLUDGES

Raw sludge	.. ..	73.7%	8 samples examined
Digested sludge	.. ..	56.7%	10 samples examined
Digested sludge, drying	.. ..	50.5%	6 samples examined
Dried sludge	.. ..	38.7%	4 samples examined

In order to determine the relative viability of *Ascaris* ova from sewage, the eggs have been cultured under laboratory conditions, mostly in formalin tap water cultures at room temperature or at a constant temperature of 26-27°C, depending on the season. From the results of these culturing experiments, which are presented in detail in Tables VII, VIII and IX, average figures for the relative viability of *Ascaris* ova in various types of sewage sludges have been computed; these average figures are given in Table VI.

In the course of these culturing experiments it has been found that with increasing duration of culturing the viability of the *Ascaris* ova decreases. This may be due to various reasons such as depletion of stored nutrients, bacterial activity, etc. Table X exemplifies this decrease in viability on prolonged culturing.

TABLE VII: RELATIVE VIABILITY OF ASCARIS OVA FROM CYDNA SEWAGE IN CULTURE (PERIOD OF CULTURING, 35 DAYS)

Type of sludge	Period of culturing	Non-viable %	Viable (Infective) %
Raw sludge	35	5.6 94.4
Raw sludge	35	29.4 70.6
Digested sludge	35	22.9 77.1
Digested sludge	35	63.1 36.9
Primary digested sludge	35	14.8 85.2
Secondary digested sludge	35	29.1 70.9
Dried sludge	35	44.8 55.2

TABLE VIII: RELATIVE VIABILITY OF ASCARIS OVA FROM BRUMA SEWAGE IN CULTURE

Type of sludge	Period of culturing (Days)	Non-viable %	Viable (Infective) %
Raw sludge	42	32.4 67.6
Digester supernatant liquor	42	55.6 44.4
Primary digested sludge	42	77.2 22.8
Secondary digested sludge	42	54.6 45.5
Dried sludge	42	66.7 33.3

The average temperatures at which the cultures are kept have a very definite effect on the development of the ova; in the same way, variations in the temperature of digestion may have a detrimental influence on *Ascaris* ova, particularly when the temperature approaches 37°C, in which case vacuolation may occur on prolonged digestion. The appearance of ova found occasionally in digested sludges can be explained only on this assumption.

From the figures for drying sludges in Table IX it may appear that there is no direct relation between the duration of drying and the relative viability of *Ascaris* ova; on the other hand, climatic conditions during the drying period definitely play an important part, and the inconsistency of the figures expressing the relationship between time of drying and relative viability shows, in the authors' opinion, that slow desiccation is only one factor responsible for the inactivation of *Ascaris* ova in drying sludge, apart from others which may even be more instrumental than drying as such.

The dried sludge referred to in the same table was collected from a sludge heap of unknown age; the moisture concentration of the sample was less than 5%. The sludge was penetrated by dense white mycelia, but no attempt was made to isolate the mould or moulds. No viable ova could be identified on microscopic examination of the original sample; on examination of cultures, however, it was established that 3.9% of the ova contained motile larvae and had remained viable in spite of extensive desiccation. But again, this shows that slow desiccation is only one of several factors operative in the final inactivation of *Ascaris* ova in drying sludge.

SURVIVAL OF HELMINTH OVA ON IRRIGATED SOIL

Samples of soil which had been irrigated with Klipspruit 'tank effluent' were collected for examination and

TABLE IX: RELATIVE VIABILITY OF ASCARIS OVA FROM KLIPSUIT SEWAGE IN CULTURE

Type of sludge	Period of culturing	Non-viable	Viable one-cell stage	Developing	Embryonated, infective
Raw sludge	42 days	16.5	16.3	—	67.2
Raw sludge	42 days	17.7	10.0	—	72.3
Raw sludge	42 days	17.9	11.0	1.9	69.2
Raw sludge	42 days	16.5	10.6	3.7	69.2
Digester supernatant liquor	42 days	30.0	19.7	2.4	47.9
Digested sludge	42 days	19.5	18.3	—	62.2
Digested sludge	42 days	23.8	13.3	0.5	62.4
Drying sludge, 2 days	42 days	37.2	21.9	3.6	37.3
Drying sludge, 3 days	42 days	35.9	8.0	1.8	54.3
Drying sludge, 7 days	42 days	35.9	11.6	0.2	52.3
Drying sludge, 12 days	42 days	29.8	13.3	4.3	52.6
Drying sludge, 13 days	42 days	26.3	11.4	2.8	59.5
Drying sludge, 42 days	42 days	35.0	20.6	2.4	42.0
Dried sludge, age unknown	42 days	86.7	4.6	4.8	3.9

TABLE X: RELATIVE VIABILITY OF ASCARIS OVA FROM CYDNA SLUDGES AFTER CULTURING FOR 28 AND 42 DAYS RESPECTIVELY

Type of sludge	Period of culturing	Non-viable	Viable, total	One-cell stage	Developing	Embryonated
Raw sludge	28 days	8.5	91.5	0.9	2.9	87.7
Digested sludge	28 days	9.3	90.7	13.2	26.7	50.8
Dried sludge	28 days	6.7	93.3	37.5	40.9	14.9
Raw sludge	42 days	26.1	73.9	—	2.9	71.0
Digested sludge	42 days	56.9	43.1	—	3.4	39.7
Dried sludge	42 days	86.7	13.3	0.6	2.4	10.3

culturing from Olifantsvlei Municipal Farm. Portions of 50 gm. of each sample were washed in physiological saline and subjected to centrifugal flotation in zinc sulphate solution and formalin tap water cultures were prepared from the surface films.

Slide preparations from the surface films did not show any helminth ova; egg counts on duplicate samples of 1.0 gm. each also failed to reveal ova of *Ascaris* or *Taenia*. Cultures were examined after 28 days at a constant temperature of 26-27°C and were found to be negative for *Ascaris* and *Taenia* ova.

Samples of tank effluent were taken from the drain carrying the effluent from Klipsuit to Olifantsvlei farm; the effluent contained between 20 and 30 *Ascaris* ova per litre. Samples were then taken from distributing furrows after the effluent had been standing overnight and partial sedimentation had taken place; the samples usually contained parts of the sediment as well, with a concentration of 140 to 200 *Ascaris* ova per litre and small numbers of ova of *Trichuris* and *Taenia saginata*. Samples of sludge were collected from soil immediately after irrigation; the samples usually consisted of a mixture of soil and settled sludge, since the sludge formed a very thin layer only. One gram of such a sample would contain 30 to 35 *Ascaris* ova which, however, were completely inactivated after a few days, owing to radiation from the sun, desiccation and activity of soil organisms. These eggs did not constitute any risk at all since the irrigated land was not used for grazing purposes for a considerable period after irrigation. The run-off effluent after irrigation did not contain *Ascaris* or any other helminth ova.

These findings are in agreement with a statement that

there were practically no cases of measles in cattle which had been grazing on Olifantsvlei land previous to being slaughtered. The period of time lapsing between irrigation and the admission of cattle for grazing on the irrigated land is sufficient to eliminate any risk of infection with *Taenia*: *Ascaris* is in this case of minor importance.

CONCLUSIONS

By heat treatment it has been shown that sewage sludge can be converted into a safe fertilizing material. But even if this, or any other method for the sterilization of sewage sludges is adopted on a large scale, it will not eliminate, and probably not even appreciably reduce the incidence of ascariasis, but will merely contribute to a reduction of the risk of infection from one particular source. An elimination of ascariasis, or at least a considerable reduction in the number of cases, will only result if steps are taken to treat and cure the carriers of the infection, namely, the Native population. Whereas the suggested treatment of digested sludge will convert this material into a safe fertilizer and will eliminate the risk of the spread of the infection in this way, it will leave the actual problem practically untouched.

Thus the recent severe outbreak of ascariasis at Darmstadt in Germany was solved, but not only by the sedimentation of the raw sewage sludge for periods sufficiently long to remove up to 90% of the *Ascaris* ova from the effluent used for irrigation. Apparently Darmstadt has always had an *Ascaris* problem which made it a matter of routine for the citizens to be treated against ascariasis once or twice a year. During and after the war, however, unsettled sewage was used for the

irrigation of vegetable fields from which not only Darmstadt, but a large area around the city was supplied. The resulting increased risk of infection, together with the shortage of anthelmintics, brought on the epidemic. With improved imports of *Ol. chenopodii* and santonin the solution of the Darmstadt problem became only a matter of time.

It is a known fact that the percentage of the Native population which is infected with *Ascaris lumbricoides* is very high. As long as the carriers of the infection are not treated and cured, the number of *Ascaris ova* in sewage will increase, and so will the risk of a spread of the infection. Ascariasis may not be regarded as a serious disease, but it has a marked debilitating effect especially on children, and this debility will, under present circumstances, be carried over into adult life and will reduce the working capacity of the subject. The reason for the high incidence of ascariasis in the Native population is not the use of nightsoil or sewage sludge as fertilizing agents, but conditions of general hygiene, sanitation and housing. Apart from treatment of patients suffering from ascariasis, general conditions of living will have to be improved before the present degree of infection can be materially reduced.

SUMMARY

The incidence of *Ascaris ova* in sewage sludges at various Johannesburg Sewage Disposal Works has been investi-

gated. The results indicate that the high infestation of the Native population with *A. lumbricoides* is responsible for the high incidence of *Ascaris ova* in sewage sludge. The relative viability of *Ascaris ova* in various types of sewage sludges has been determined experimentally, by culturing samples of sewage and sewage sludges containing *Ascaris ova* under laboratory conditions. It has been concluded that only the treatment and eventual cure of the carriers of ascariasis will finally result in an appreciable reduction in the number of *Ascaris ova* found in sewage and sewage sludges under present conditions. The proposed sterilization of sewage sludges will convert sludge into a safe fertilizing material, but it will eliminate the risk of infection from this one source only.

The authors' acknowledgments are due to Dr. E. J. Pullinger, of the Johannesburg abattoirs, Mr. K. G. Vels, the District Meat Officer, and the manager of Olfantslei Municipal Farm, Mr. Bloom, who supplied relevant information and gave valuable assistance; and to Prof. Dr.-Ing. F. Reinhold, of the Technische Hochschule, Darmstadt, who put the results of the Darmstadt investigations at the authors' disposal and made material available which proved of immense value for reasons of comparison.

The authors wish to thank the S.A. Council for Scientific and Industrial Research for permission to publish this paper.

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DRUG TREATMENT—A SURVEY*

A. H. VOSLOO, M.B., CH.B.
Somerset East

During the past 15 years that I have been in general practice, I have found that drugs now used are far more important and specific than they were when I was a student. In those days we could count on our fingers the number of specific drugs, e.g. quinine, Salvarsan, Emetine, Insulin and a few others. Thus, when I commenced practice, the recovery of a patient depended more on his own powers of resistance than on specific drugs. During the past 12 years a number of specific and very useful drugs have been made available as weapons in the fight against disease.

Some of the outstanding ones are, of course, the sulphonamide group of drugs, the antibiotics, the vitamins, the anti-histaminic drugs, the anti-coagulants, the hormones (synthetic and natural), the amino acids, radio-active isotopes, and a number of other useful drugs.

Going back to the sulphonamides, one recalls what revolutionary changes came about after the introduction of the first member of this group, viz. Prontosil. This discovery provided the impetus for research workers to hunt for and find other related compounds of therapeutic value. We think of M & B 693, M & B 760, Sulphadiazine, Sulphaguanidine, Sulphamerazine, Sulphasuxidine and a number of others.

The antibiotics make up the next important group. Penicillin was hailed as the wonder drug of the century. It has indeed even surpassed all expectations. It has been found to have curative powers over a number of infections not appreciably influenced by sulphonamides.

Again, as in the case of the sulphonamide group, scientists

were quick to realize the possible existence of related compounds. Soon they had found Streptomycin, Aureomycin, Chloromycetin and Tetramycin.

The sulphonamides alone, and in association with the antibiotics, have revolutionized medical and surgical treatments: puerperal fever, cellulitis, erysipelas, pneumococcal pneumonia, gonorrhoea, ophthalmia neonatorum and many other infections have become relatively mild diseases—if correctly treated.

Surgeons are able to do many more radical operations with the aid of the preventive and post-operative use of these two groups of drugs. They are now able to operate on some of the most desperate cases of peritonitis and other infections—and still give a fair recovery rate.

The practice of obstetrics has also been considerably influenced. Caesarean section has fewer contra-indications. Forceps delivery and other manipulative treatments are undertaken with less fear of the ever-present germs.

Operative results have improved considerably and patients no longer regard operations only as a last resort.

Venereologists have at last in Penicillin a powerful drug to treat and cure gonorrhoea and syphilis.

These drugs are particularly useful to the ophthalmologists and ear-nose-and-throat specialists.

If it were not for these drugs, thoracic surgeons would not gain the successes they do in their operative treatment of heart diseases.

The abdominal surgeons now rarely drain the peritoneal cavity after acute and ruptured appendicitis, ruptured peptic ulcers, acute or gangrenous gall bladders.

Acute osteitis is no more the dreaded disease of the active young boy. Early intensive antibiotic treatment, with or without early drainage, very often gives resolution of the disease.

* Presidential Address delivered by Dr. A. H. Vosloo of Somerset East, President of Cape Eastern Branch, at the Annual General Meeting of the Branch held at Grahamstown on 24 February 1951.

In passing, I may mention the first two cases in which I used Penicillin.

The first case was one of very severe pneumonia in a woman of 30 years who was also suffering from chronic asthma. She was in an extremely critical condition. The usual treatment plus sulphonamides had not improved her. We managed to get two ampoules, each of 100,000 units, of Penicillin. Within 12 hours after commencing Penicillin treatment she responded most dramatically. I am certain that if this case had not had Penicillin, she would not have survived.

The next case, equally dramatic, was that of a young girl, six years of age, suffering from congenital heart disease complicated by malignant endocarditis. Her condition was extremely grave. She was markedly oedematous, with scanty blood-stained urine, high temperature, enlarged spleen and liver, and a positive blood culture for a Penicillin-sensitive strain of *Streptococcus viridans*. Within four days after commencing Penicillin treatment, the temperature subsided, the swelling disappeared, the urine became clear, and all signs of marked improvement were present.

Unfortunately the supply of Penicillin gave out, and after a few days the case relapsed. On account of the scarcity and high cost of Penicillin at that time, only intermittent supplies could be obtained for the next four weeks. Every time the supply ran out, the case relapsed.

Eventually a sufficient supply was obtained for a full month's treatment: she received 30,000 units every three hours for that month. On the cessation of treatment no relapse took place. She is now living in the Free State and enjoying the very best of health, except for the presence of the congenital heart condition, which does not seem to worry her in any way.

The next antibiotic to come into prominence was Streptomycin, which was found to have an effect on a wider range of organisms than Penicillin. It was found that Streptomycin could be used in conjunction with Penicillin in mixed infections, as, for example, peritonitis and pneumonia. An important action of Streptomycin is against tubercle infection. This was the first drug discovered which had any appreciable effect on the tubercle bacillus. Unfortunately the result is not nearly as dramatic as one would like it to be. In conjunction with P.A.S. better results are obtained and Streptomycin-resistant strains are not so easily caused. We feel sure that in the near future a specific antibiotic for the treatment of the tubercle will be found.

Another great advance was the discovery of Aureomycin, which can be given orally or by injection. It has an action on most of the infections benefited by Penicillin and Streptomycin. In addition, it is the first drug to influence virus infections, as, e.g. virus pneumonia, typhus, tick-bite fever and others.

Soon Chloromycetin became available. Its action on typhoid and paratyphoid fevers can be very dramatic. One thing to remember is to commence with small doses, as the toxins from the dying germs may be overwhelming to the resistance.

Terramycin, another very recent addition to this group, has more or less the same effect as Aureomycin, but seems to be the only antibiotic with an appreciable effect on whooping cough.

A lesser-known antibiotic, which can only be used locally, is Tyrothricin. I have found this extremely useful in impetigo, chronic ulcers and sinuses, and osteitis.

A very new and important group of specific drugs is that of the vitamins. In my student days there were only four important vitamins—A, B, C and D. Now there are literally hundreds of isolated fractions of these main groups. Some of these factors are used specifically for a specific deficiency with dramatic results. In practice, however, one finds that one must give, in cases of deficiency, a combination of many factors, as multiple deficiencies are common. Also, by giving only one factor, a deficiency of other factors may be precipitated.

The vitamin group is probably the most abused of all drugs. It is often prescribed for people who need it least and withheld from those who need it most. The specific actions of these vitamins are well known. Vitamin B₁ is a very recent isolation and gives most dramatic results in pernicious anaemia, and peripheral and toxic neuritis, etc. There are some non-specific uses of some of the vitamins; for example, vitamin B₂ (nicotinic acid) I find very useful in the treatment of tinnitus

aurium and chilblains. Using vitamin B₂ together with vitamin K, I have had excellent results in the treatment of chilblains. Vitamin C in large doses I find very useful in hay fever. Vitamin E in the form of alpha-tocopherol acetate I find useful in coronary sclerosis and peripheral vascular disease. These vitamins used to be extracted from foods, but many can now be produced synthetically.

In the group of anti-histaminic drugs there are a number of related compounds with varying degrees of toxicity and efficiency. I find them helpful in hay fever, urticaria, serum reactions and, strangely enough, paralysis agitans. I have found no results in asthma.

The anti-coagulant group of drugs I consider of great usefulness in vascular disease. The three members of which I have experience are Heparin, Dicumarol and Tromexan. Heparin is given by the intravenous or intramuscular route. Its action is quick, but short-lived. Dicumarol is given by mouth, but its action is slow and prolonged. Tromexan is also given by the oral route and seems to have an action intermediate between those of Heparin and Dicumarol. I use the combination of Heparin and Dicumarol routinely in coronary thrombosis. I am convinced that if Heparin is given early and followed up with Dicumarol, the prognosis of coronary thrombosis is considerably improved. For venous thrombosis the same combination is exceedingly beneficial to the patient. Tromexan is less toxic than Dicumarol, and on stoppage the coagulation time soon returns to normal. I have had only one case of bleeding after the use of Dicumarol, and it happened in a most severe case of coronary thrombosis. This patient had a heavy haematuria, which settled within 36 hours after the stoppage of Dicumarol and treatment with vitamin K.

Hormones play a very important part in general practice. We have the synthetic and natural oestrogens for the treatment of menopausal and certain menstrual conditions. They have recently been used beneficially in the male. In prostatic carcinoma synthetic oestrogen has a slowing-down effect on the growths, if given in sufficient dosage, and provided the testicular action is removed. A useful new preparation is ethynodiol-estradiol, which is 20 times as potent as Stilboestrol. In the treatment of mumps Stilboestrol is very useful in the prevention and treatment of orchitis. Recently certain male sexual pervers have been successfully treated with Stilboestrol, a method of treatment which should be further investigated. Testosterone is useful in the so-called male climacteric and other deficiencies of the male gland hormone. Non-specifically, I have found it useful in a few cases of intermittent claudication and coronary sclerosis. Also in the female I find it useful in certain cases of menorrhagia due to excess action of the oestrogen. Other endocrines isolated and commercially produced during the last 15 years are progesterone, the gonadotrophins and, very recently Cortisone and A.C.T.H. This Cortisone has been found to be very effective in rheumatoid arthritis, rheumatic fever, Addison's disease, asthma, chronic urticaria and even leukaemias and lymphomas.

Other Useful Drugs: Hexamethonium bromide is a comparatively new drug used in the treatment of high blood pressure. It has been found to be useful in those cases of high blood pressure that would be improved by the Smithwick's operation. It does not seem to improve the blood pressure of patients over 50. This treatment is by no means a cure, but is really worth trying before subjecting a patient to Smithwick's operation.

Hexamethonium bromide has also been used in the treatment of peptic ulcers. Its action in this instance is to cut off vagal impulses; it depresses formation of hydrochloric acid and decreases gastric motility.

Related substances are paramethonium iodide and paramethonium chloride. They are, theoretically, useful in the treatment of peptic ulcers.

T.E.A.B. is useful in the treatment of vascular spasms, particularly for chronic leg ulcers. In one case of very large gastric ulcer I used T.E.A.B. injections combined with diet, rest and alkalis—with surprisingly rapid cure, as proved by radiology.

T.E.C. (Etamont), a closely related substance, has been found useful in muscular spasms, especially in acute poliomyleitis.

Hyaluronidase has been found useful in liquefying thick fibrinous effusions of the pleural cavity and facilitates their

removal. It has also been used successfully in certain cases of sterility. Given in conjunction with a local anaesthetic, it enhances the effect.

Thiouracil has established itself in the medical treatment of hyperthyroidism and in the pre-operative treatment of this condition. The consensus of opinion, however, is that surgery is preferable in hyperthyroidism when surgery can be undertaken.

Intravenous iron, or Ferrivennin, is an advance in the treatment of hypochromic anaemias. Many cases seem to be unable to assimilate iron given by mouth.

Dextran can be successfully used as a substitute for blood plasma. It will thus be very useful in the treatment of burns and shock.

Curare and its derivatives have been found to be indispensable in modern anaesthetics.

In this brief review, I have tried to show that medicine has acquired many more specific and potent drugs. Yet a large number of illnesses defy the ingenuity of the practitioner. Degenerative vascular diseases, cancer, tuberculosis and war now remain the chief causes of mortality in the civilized countries.

EXCHANGE OF CORRESPONDENCE BETWEEN PROF. S. F. OOSTHUIZEN (PRESIDENT OF THE S.A. MEDICAL AND DENTAL COUNCIL) AND DR. A. W. S. SICHEL (PRESIDENT OF THE MEDICAL ASSOCIATION OF SOUTH AFRICA)

The President,
Medical Association of South Africa,
Cape Town.

Prof. S. F. Oosthuizen,
President,
S.A. Medical and Dental Council,
Pretoria.

Dear Dr. Sichel,

The purpose of this is to thank you very much for the congratulations and good wishes conveyed to me on the occasion of my election as President of the Medical and Dental Council.

I am deeply conscious of the great honour bestowed upon me and shall endeavour to the best of my ability to justify the trust and confidence placed in me.

Thank you very much for the promised co-operation. I am looking forward to a long period of fruitful co-operation with your Association in the best interests of the public and the two great professions concerned with the health of the people of this country.

Yours faithfully,
(Signed) S. F. Oosthuizen.

21 March 1951.

Dear Prof. Oosthuizen,

Many thanks for your letter of the 21st instant addressed to me as President of the Medical Association of South Africa.

To me the last paragraph of your letter is full of significance, and I reciprocate with all my heart your reference to a long period of fruitful co-operation between your Council and my Association in order to serve the best interests of the public. If two bodies, representing members of a great profession who are colleagues and friends, cannot work in the closest co-operation and on the very best terms, the situation to me would be most regrettable and even ludicrous.

May I once again wish you all success in the remainder of your term of office.

Yours sincerely,
(Signed) A. W. S. Sichel.
28 March 1951.

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

FULL-TIME ASSISTANT EDITOR

Applications are invited from bilingual registered medical practitioners for the post of full-time Assistant Editor of the *South African Medical Journal*, on the salary scale of £1,200 + 50 - £1,500 per annum, plus cost-of-living allowance at Government rates.

Applicants should state when, if appointed, they would be able to assume duty at the Association's Head Office in Cape Town. The successful applicant will be required to contribute to the Association's Superannuation Fund.

Applications must be lodged with the undersigned (from whom any further information may be obtained) by 12 noon on Saturday, 26 May 1951.

A. H. Tonkin,
— — Medical Secretary.

Medical House,
P.O. Box 643,
Cape Town.
27 April 1951.

VOLTYDSE ASSISTENT-REDAKTOUR

Aansoeke word gevra van tweetalige geregistreerde geneesherre aan die pos van voltydse Assistent-Redakteur vir die *Suid-Afrikaanse Tydskrif vir Geneeskunde*, salaris-skaal van £1,200 + 50 - £1,500 per jaar, plus lewenskostetoelaag volgens die regeringsskaal.

Appelante moet meld wanneer hulle pligte by die Hoof-kantoor van die Vereniging in Kaapstad kan aanvaar indien aangestel. Die suksesvolle applikaant sal moet bydra tot die Pensioenfond van die Vereniging.

Aansoeke moet die ondergetekende (van wie verdere inligting verkyk kan word) voor 12 middag op Saterdag, 26 Mei 1951 bereik.

A. H. Tonkin,
Mediese Sekretaris,
27 April 1951.

PASSING EVENTS

Dr. Lucie van Dam will begin practice (on 1 June 1951) as a specialist psychiatrist at 43 Mill Park Road, Port Elizabeth. Telephone: 69006.

A meeting of the Baragwanath Medical Society will be held in the Nurses' Training School, on Monday, 28 May 1951, at 8.15 p.m. Mr. S. Kay and Mr. J. G. O. Hamman will be the speakers in a symposium on *Intestinal Obstruction*.

Dr. A. M. Michael, F.R.C.S. (Edin.), M.R.C.O.G., M.M.S.A. has returned after four and a half years overseas and has commenced practice as an Obstetrician and Gynaecologist at 416 African Life Buildings, 85 St. George's Street, Cape Town. Telephone: —Rooms: 2-2375; Residence: 2-5408.

Dr. A. Schiller, M.B., Ch.B., D.L.O., F.R.C.S., has recently returned from overseas where he spent three years doing post-graduate work in Otorhinolaryngology under Dr. I. Simson Hall at the Edinburgh Royal Infirmary.

Dr. Schiller has commenced practice as an Ear, Nose and Throat Specialist, at 1 Hof Street, Gardens, Cape Town. Telephone: —Rooms: 2-8327; Residence: 4-5041.

CAPE TOWN PAEDIATRIC GROUP

A meeting will be held in the Lecture Theatre (Fourth Floor) at Groote Schuur Hospital, on Monday, 28 May 1951, at 8.15 p.m.

Dr. Walter L. Phillips will speak on: *Some Radiological Appearances of Pulmonary Disease in Childhood*.

All medical practitioners are welcome.

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- As in the case of all new therapies, great care must be exercised in patients suffering from Cardiovascular diseases; patients having less than 85% of normal Liver function; chronic or acute Nephritis; Epilepsy; Diabetes mellitus; Asthma and Pregnancy.
- "ANTABUS" should not be administered to patients who have been given Paraldehyde as it may be metabolised through an Acetaldehyde stage. Similarly Paraldehyde should not be administered to "ANTABUS"-treated patients.
- The patients desire to stop treatment should be discouraged until such time as it is confidently felt that social readjustment has been effected. The aid of social workers such as "Alcoholics Anonymous" is, in many cases, of great importance.
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REVIEWS OF BOOKS

MURDER BY ACONITINE

Trial of George Henry Lamson. Edited by Hargrave L. Adam. (Pp. 216. With five illustrations. Second edition. 15s.) London: William Hodge and Company Limited. 1951.

Contents: 1. Introduction. 2. Table of Dates. 3. First Day—Wednesday, 8 March 1882. 4. Second Day—Thursday, 9 March 1882. 5. Third Day—Friday, 10 March, 1882. 6. Fourth Day—Saturday, 11 March 1882. 7. Fifth Day—Monday, 13 March 1882. 8. Sixth Day—Tuesday, 14 March 1882.

Some 70 years ago George Henry Lamson, a medical practitioner, murdered his brother-in-law by the administration of aconitine. This rare poison was as unusual as a homicidal weapon in the 1880's as it is to-day. Indeed, in this country the only recorded cases are suicidal.

The chemical methods of analysis were far from satisfactory and the main evidence relied upon were the peculiar effects of the taste of this alkaloid.

The Defence made an interesting and very severe assault upon this position by trailing the red herring of cadaveric alkaloids—a stratagem reminiscent of the technique in the famous South African poisoning case, *Rex vs. de Melker*.

Another interesting issue, which constitutes a problem to-day no less than it did in 1882, is the fact that the toxicological examiners for the Crown were inaccessible to expert representatives of the Defence during the performance of the analyses. This places the Defence at a considerable disadvantage, especially when limited amounts of material are available for investigation and when, in any event, supreme importance is attached to subjective data such as those observed by the sense of taste.

The volume under review also illustrates the many pitfalls in giving expert testimony. The evidence of the general practitioner who attended upon the deceased shortly before his death, is a model of cautious and proper replies to searching and skilfully considered questions. The chief toxicological witness for the Crown (Dr. T. Stevenson), acquitted himself extremely ably until his professional conceit was touched. When asked about the use of aconitine in pleuro-pneumonia, he admitted that he had heard of such employment of the drug and that he had read an account to this effect 'in a journal not edited by a medical man'. When asked to disregard the journal and to consider the question by itself, Dr. Stevenson could not resist the inclusion in his second reply that he had read of this use of aconitine 'in an anonymous article in a journal edited by a man who was not a medical man'. In this fashion he prepared himself for a damning knock-out blow, because his own assistant in the tests he had performed, a Dr. du Pré, was not a medical man. His discomfiture was complete when the Defence Counsel put the question which ended this part of the evidence:—"I am sure you did not wish to throw a doubt on your collaborateur, Dr. du Pré. He is not a medical man?—He is not!"

The detailed question-and-answer record of the medical evidence should be read by every practitioner who may have to give expert testimony in our Courts. From this point of view, the volume is particularly informative.

While it is appreciated that it was not possible for the accused to give evidence in his own defence in the latter part of the nineteenth century, it is remarkable that no evidence was called by Counsel for the Defence to throw doubt upon the legal responsibility of the accused person. He was a most advanced morphinomaniac with a particularly unfavourable family history and many of his friends and acquaintances were in a position to testify to Dr. Lamson's deluded behaviour. The weight of this testimony, subsequent to his conviction and sentence to death, was strong enough to occasion the stay of execution on two occasions. The President of the United States himself cabled to the Home Secretary to grant a postponement in order that affidavits on their way over from America could be considered. All this, however, was of no avail and before his execution Lamson confessed to the commission of the crime about which he had so strenuously at all stages protested his innocence. The closing speeches by the Prosecution and the Defence as well as the summing up by the Judge are amongst the most excellent of their kind. Indeed,

Mr. Montagu Williams, Counsel for the Defence, addressed the Jury for two days in his final appeal, which was a masterly analysis of the case.

The Editor's introduction is a very stimulating one. He puts forward the hypothesis that Lamson murdered his brother-in-law, not by inserting the aconitine in a capsule (as the Crown alleged), but by poisoning a piece of Dundee cake, a view favoured by one of the Defence Counsel after the trial was over. This adds to the fascinating problem which this extraordinarily interesting case presents to the medical reader.

PREVENTIVE MEDICINE

Preventive Medicine and Public Health. By Fred Grundy, M.D., M.R.C.S., D.P.H. (Pp. 299. With 38 figures. 18s.) Luton: The Leagrade Press Limited. 1951

Contents: 1. Administration and Practice. 2. Principles. 3. Statistics and the Control of Infectious Diseases. 4. Historical and Certain Other Subjects.

This publication is not in any sense a textbook on hygiene and sanitary practice, and subjects such as water supplies, sewage disposal, ventilation, heating and certain other environmental conditions, have been purposely omitted by the author, who indicates that there are many excellent and comprehensive works on these subjects from which students and practitioners can choose. There are, however, some very useful chapters dealing with preventive medicine and public health, with particular reference to conditions in Great Britain.

Reference is made to the National Health Service Act, 1946, and organized medicine, and other public health legislation in Great Britain, to social security and to national insurance. Considerable emphasis is given to the consideration of social medicine and to health centres. The chapters on mortality and morbidity statistics are well set out and easily readable.

The portion dealing with the evolution of public health in Great Britain from its inception in the first half of the 19th Century to present-day standards is well written and extremely interesting.

There is also a chapter on the constitution and activities of the various international health organizations, with particular reference to the constitution and structure of W.H.O., and its scope of activities.

This publication is a very readable and well-compiled handbook on public health conditions in Great Britain; but it is essentially a book written on conditions overseas and therefore will not entirely meet the needs of undergraduates in this country. It is, however, recommended as a very interesting introduction to preventive and social medicine in Great Britain.

MALIGNANT DISEASE OF THE FEMALE GENITAL TRACT

Malignant Disease of the Female Genital Tract. By Stanley Way, M.R.C.O.G. (Pp. 279 + vii. With 38 illustrations. 24s.) London: J. & A. Churchill Limited. 1951

Contents: 1. Carcinoma of the Vulva. 2. Carcinoma of the Vagina. 3. Carcinoma of the Cervix. 4. Carcinoma of the Body of the Uterus. 5. Carcinoma of the Ovary. 6. Carcinoma of the Fallopian Tube. 7. Sarcoma of the Genital Tract. 8. Pregnancy Complicated by Malignant Tumours. Author Index. Subject Index.

In recent years Stanley Way has become well known for his interest, experience and research on the subject carcinoma of the vulva and vagina. His articles and lectures on the subject have been widely read. He has now written a complete book on *Malignant Disease of the Female Genital Tract*. A volume of this kind has never been published before. Information on the aetiology, diagnosis and treatment of these malignant conditions has always been scattered in textbooks of pathology, gynaecology, radiology, etc., and in publications in the various journals. Stanley Way has succeeded most admirably in presenting the subject as an integrated one in this new textbook.

Every type of malignant disease of the female genital tract is dealt with:—the vulva, vagina, uterus, Fallopian tube and ovary are considered systematically; there are also chapters on miscellaneous malignant tumours (such as chorionepithelioma,

melanoma) and on malignant disease complicating pregnancy. The subject matter is of the highest standard, the literature is extensively quoted (there is an excellent bibliography appended to each chapter) and the author has made use of his own considerable experience at Newcastle-on-Tyne. Every aspect of each type of carcinoma is discussed, including a historical review, the incidence, aetiology, pathology, prognosis and details of the treatment, surgical, radiological and palliative. The text, which is written in a very fine style, is freely illustrated by macroscopic pictures, photomicrographs, diagrams and tables. Of particularly high standard are the chapters on carcinoma of the vulva, vagina and ovary, and carcinoma of the cervical stump following subtotal hysterectomy. One minor shortcoming is the absence of any discussion on the treatment of carcinoma of the ovary and uterus by hormones.

There is much interest in this to-day, and one would have expected some reference to it in a book of this kind.

The reviewer can find nothing but praise for this excellent publication. It should be of considerable value to practising gynaecologists, pathologists and radiotherapists, as well as to postgraduate students in these subjects.

FRACTURE PRIMER

Primer on Fractures. Prepared by the Special Exhibit Committee on Fractures in co-operation with the Committee on Scientific Exhibits of the American Medical Association. (Pp. 109 + xi. With 48 figures. Sixth ed., \$2.00.) New York: Paul B. Hoeber, Inc. 1951.

Contents: 1. Emergency First Aid Splinting for Arm and Leg. 2. How to Apply Plaster of Paris Bandages. 3. Fracture of the Neck of the Femur. 4. Intertrochanteric Fracture of the Femur. 5. Fracture of the Shaft of the Femur. 6. Fracture of the Tibia and Fibula. 7. Fracture of the Ankle. 8. Fracture of the Clavicle. 9. Fracture about the Upper End of the Humerus. 10. Fracture of the Shaft of the Humerus. 11. Supracondylar Fracture of the Humerus. 12. Fracture of Both Bones of the Forearm. 13. Colles' Fracture. 14. Dislocation at the Shoulder Joint. 15. Compression Fracture of the Spine. 16. Compression Fractures of the Vertebrae. 17. Fracture of the Cervical Vertebrae. 18. Movement and Exercise. 19. Massage in the Treatment of Fractures. 20. Splints and Accessories for the Doctor's Automobile. 21. Splints and Accessories for the Doctor's Office. Index.

This little book deals briefly with the common varieties of fracture and, as far as these are concerned, confines itself almost entirely to the first-aid treatment of individual fractures and the salient features in their reduction and immobilization. In addition, there are short notes on plaster-of-Paris technique and on active exercise and massage in the treatment of fractures. Dislocations, apart from that of the shoulder joint, difficult fractures and uncommon fractures are merely mentioned or omitted.

The book is intended to serve as a guide to students and non-specialist practitioners and there is much to be said for its brevity and stress on cardinal points. However, much would have been gained and nothing lost by somewhat greater detail in some directions, such as the application of a Thomas' splint to a fractured femur and its maintenance. Also, one would have liked to see included certain fractures, particularly those of the upper and lower ends of the shaft of the femur and fractures of the pelvis. What is useful from the point of view of the student are summaries at the ends of chapters and blank pages where the text can be amplified by notes. This feature, together with its avoidance of detail and its concern with common and important fractures, makes it probably an ideal book for the student for use in conjunction with his lectures.

CHILDREN'S FEET

Your Children's Feet. By Charles A. Pratt. (Pp. 52. With 14 figures. 7s. 6d.) London: Watts & Company.

Contents: 1. Introduction. 2. The Normal Foot. 3. The Signs and Incidence of Deformity. 4. Hallux Valgus. 5. Footwear. 6. Sizes and Fittings. 7. Their Feet and Their Future.

This small book, written by a chartered physiotherapist, is eminently suitable for recommendation to the parent and any nurse engaged in school inspection or work with small children.

Brief and limited in scope, it gives the necessary simple but all-important information which serves to guide parents in choosing the correct footwear for their children before their feet have been ruined by many of the wholly unsuitable shoes on the market. It also emphasizes the importance of the early recognition of any deformity.

The author's statements are based largely on the result of research carried out on children of 13-15 years of age. The patient is all too eager to have his corn cured but is apt to forget to find and remedy the cause. Hallux valgus, too, can be prevented by suitable footwear; the author goes so far as to say that were this done, the condition would become extinct.

Many of the author's suggestions are both progressive and extremely sensible, such as the possible setting up of a committee to enquire into the cause and incidence of acquired foot deformity in children, and to compile data concerning those measurements of the feet that are essential in the design and manufacture of footwear. Other of his suggestions, however, such as the wearing of hose, in which at least the part covering the foot is all wool, will probably never come into fruition in these days when fashion is universally regarded as of prime importance.

CORRESPONDENCE

MEDICINE THROUGH THE YEARS

To the Editor: We may now be inclined to grumble at the fees charged for medical services and we may say that specialists' fees seem very high. This attitude towards the fees payable to medical practitioners for services rendered is no modern development. From the beginning of the time when doctors were regarded as members of a separate profession there have been arguments over the fees they should be paid.

Apparently one of the earliest records of this type is the carving on rocks found in Iraq. This inscription is believed to have been executed at the instruction of some Babylonian monarch, who seems to have thought the information should be preserved for posterity.

Perhaps the prevailing difference in the fees charged the poor and those charged the rich dates back to those days, when the poor man only paid about 20% of the fees levied on princes and the very wealthy. This practice seems to have been regulated by law, which also contained a proviso to the effect that if a doctor failed to achieve a cure he should not be paid a fee and could also be sued for damages.

Doctors had to be careful in those days, for when one of their patients died they might have both hands struck off, for the law does not seem to have taken into consideration the fact that some of those patients might have died through natural causes.

Medical practice was then crude and not often helpful, yet people had to have doctors. For a lengthy period in China it was the convention for a family to hire its special doctor to prevent them from becoming ill, for as soon as one member of the family was sick all fees ceased, and payment was only resumed when all was well again.

In the days of ancient Greece most of the doctors were employed by the State. Then every municipality had its own consulting rooms, and attached to them were operating theatres which were well equipped according to prevailing ideas. There were private doctors as well as these State officials. People with means preferred to seek the advice of the private practitioners, who were paid by means of a small pig of gold or silver, or with a copy of the portion of the body believed to be affected.

The heathen Romans seem to have learnt the healing art from the Greeks and Arabs, many of whom had been introduced into the country as slaves. Every Roman of means or position had his personal medical attendant, who was a member of his household staff. He was occasionally permitted to try to cure the ailments of friends, and so long as such a doctor remained a slave all the fees he received in such work were the perquisite of his master.

Julius Caesar was the first prominent Roman to realize the respect due to the competent doctor and he directed that all members of that profession be accorded free citizenship. The

erstwhile slaves then advanced rapidly in the social scale, for some of them married into the noble houses.

Their fees began to rise, and the fashionable or outstanding doctors soon had incomes to rival those of the most prominent families in Rome. For instance, Antonius Musa, a famous physician of Augustus, was paid by the emperor a salary of 250,000 sestertes, and received such presents as a very large estate and numerous valuable gems.

Before such doctors were freed from slavery, they were among the most valuable types of property the wealthy Roman could own. Antonius Pius established the price of a medical slave at sixty pieces of gold, a price far in excess of that paid for any other type of slave. Andromachus, the private physician of Nero, was the first of his profession to be called an architect, or head of the household. A special part of Capitoline Hill was reserved for the homes of such physicians, and it was later estimated that few of the specialists who lived there earned less than 200,000 sestertes per annum. In addition to these there was the increasing number of lesser lights of the profession, as medicine seemed to many so easy and lucrative a profession that presently it was overcrowded. Some of the less successful later left it to become gladiators or to engage in other occupations.

The 'remote control' treatment of diseases seems to have been originated by Roman physicians. Thus we are told that the famous Galen was by this method successful in treating patients so far away as Britain, France, Africa and Asia Minor. There seems to have been so much of the racket about this sort of medical practice that we had Seneca in a familiar address accusing the physicians of being dishonest and therefore not deserving the confidence of humanity. He accused them of constantly prolonging and even aggravating an illness so that they would be able to derive a steady income or extract higher fees. His remarks were not without justification.

While in modern times women had an uphill task to gain admittance to the medical profession on equal terms with men, yet in Roman times a large number of women doctors were in regular practice. Some were certainly devoted to preserving life, but others seem to have been unscrupulous poisoners in the pay of noble houses. Familiar is the story of Locusta, who was responsible for the murder of Britannicus. According to Tacitus, she was the paid poison agent of some four emperors before she was finally executed by Galba. Before that fate overtook her, she was a person of wealth and consequence in ancient Rome. Her estate was valued at about a million sestertes, most of it made by unprofessional practices. But all the women doctors were not cast in that mould. Although some were little better than vendors of cosmetics, they added the title 'medica' to their other distinctions.

The medical profession was also of high standing in the East, where one of the richest physicians of ancient times was Jivaka, son of the Hindu king of Sakata. For clever work in healing a certain Eastern potentate he received the probably record fee of 250,000 fine ounces of gold. He must have been an outstanding practitioner, for from some other cases he attended he received fees consisting of sacks of gold.

The medical authority of the early Persian doctors was the book known as the 'Ventidat,' which stated definitely the scale of fees to be charged by doctors. Before a man was regarded as qualified to practice he had to prove his skill by treating three sick people. If he was so unlucky as to have all these patients die he was rejected as unsuited for the medical profession, forced to seek some other career in which he might prove more lucky. The fees varied according to the social standing of the doctor and also according to that of the patients he treated.

Hundreds of years ago in Europe the practice of medicine was a crude business compared with what it is now. Yet even hundreds of years ago there were European countries in which the law regulated the fees of medical practitioners. In Italy in the days of the Hohenstaufen the medical charges were fixed. A doctor could not charge for attending a poor person, and when calling on the very rich he only received the equivalent of about 9d. a day. When he was dealing with a particularly desperate case he was permitted to set a higher fee and to bargain regarding it before getting down to work.

Medical practitioners have probably always had to contend with bad payers. In the old chronicles of medicine we come across references to this aspect of the work. Salerno was

then the principal medical school in Southern Europe. Its students were taught to demand their fees whenever a patient mentioned to them a fear of death, the argument being that when he recovered he would not be so ready to pay. It is obvious there was much truth in that view.

John of Procida, at different times physician to such emperors as Frederick II, Conrad IV and Manfred, was among the most prosperous doctors of his time, earning a huge fortune in fees. Manfred presented him with the Island of Procida in the Gulf of Naples in token of gratitude.

His title to the island was not too clear, for when Charles of Anjou succeeded Manfred he demanded the return of the island to the Crown. The doctor then found himself in disgrace, bitterly resentful towards the House of Anjou. He was responsible for the 'Sicilian Vespers' plot which ended the French King's rule in the south.

By this time the medical profession was well organized in Germany. In the days of the Emperor Sigismund a proclamation was published in every town laying it down that each municipal area of any size had to have its doctor, an early example of the modern medical officer of health. It was also stipulated that such towns must pay their medical officers an annual salary of 100 florins each. This did not debar a doctor from engaging in private practice, provided he confined such work to the wealthy inhabitants. The poor must be attended free; from the rich he could extract the fees they were willing to pay.

At times even the poor were ready to demonstrate gratitude to a doctor who had helped to cure their ills, and thus from both the rich and the poor, the admired or respected town doctor received generous presents in the form of grain and other farm produce, game, sweetmeats, casks of wine, and from the princely houses valuable jewellery. Wurzburg had for a time a clever woman physician who after a comparatively short period of work had earned sufficient to purchase a large estate and to settle down there at leisure.

Elsewhere in Europe medicine then also proved a profitable profession. The temptation to get rich quickly seems to have been so pronounced that precautions were introduced to protect the poor against exploitation. Such measures were considered unnecessary in the case of the rich. Catholic priests frequently felt it their duty to denounce the greed of doctors. We have the instance of the Augustinian Father who cited from the pulpit the case of Cortarrro who was paid 10,000 ducats a month by Louis XII of France. Pope Honorus was then paying his physician 400 ducats a day. He pointed out that 'thus do the doctors purge not only the body but also the purse'.

A fee of 10,000 thalers, the cost of his journey, a bag of precious stones and a life annuity of 1,000 thalers was paid to the surgeon who went from Paris to treat Augustus the Strong of Poland. When this French doctor was safely back in Paris he reported to his client that this fee had not been large enough to pay his expenses. That resulted in the payment to him of a further fee of 3,000 thalers.

All this sort of thing gives point to the argument that medicine is an expensive matter. Even in modern times large fees have been paid to outstanding practitioners. A prominent surgeon went to San Remo to operate on the Emperor Frederick, and his fee is believed to have been about £25,000 plus expenses. Another prominent European surgeon went to India for a consultation with the Maharaja of Mysore, and it is suggested that his fee exceeded £50,000.

P.O. Box 1953,
Cape Town.
28 March 1951.

W. L. Speight.

SELF DEMAND INFANT FEEDING

To the Editor: Dr. F. A. Lomax's observations on *The Self Demand Method in Infant Feeding* (this Journal, 14 April), and his experiences with Bantu and Coloured infants are of great interest.

However, it must be recognized that this procedure is not new and, viewed historically, represents a swing-of-the-pendulum phenomenon. Among primitive people and in granny's day, a baby was fed whenever it was restless or cried. Then came the Behaviourists *et alii*, who were responsible for the rigid schedule, of which 3- or 4-hourly feeding was but a part. To parody Ecclesiastes, there was a time for

feeding, a time for sleeping, a time for crying and a time for training in clean habits. Even mothering was regulated by the clock.

Now we have discovered that human beings, even babies, hate regimentation and stern discipline, and that relaxation from routine lends colour to life. Hence the Self Demand Method of Infant Feeding.

As was to be expected, the next phase of this reaction was the resuscitation of the 'dummy', euphemistically referred to in America as the 'comforter' or 'pacifier'. Pennoyer, in an important article on *Experiences with an Elective Rooming-in Programme* (J. Ped., February 1951), discussing breast feeding of the new-born, has this to say: 'One of the great advantages of breast feeding is admittedly that the mother is unable to see how much the baby has taken, so that he is likely to be allowed to continue to suckle as long as he wishes, whereas an empty bottle is quickly taken away from the formula-fed baby.' Yet the sucking desires of the neonate are tremendous, and undoubtedly the failure to satisfy this need accounts for much of the bedlam accepted as natural in the congregate nursery. To this end we have made increasing use of the dry nipple or pacifier (an ordinary nipple stuffed with sterile cotton). It is striking to see how much of the restlessness and crying of the new-born infant can be eliminated by the addition of this one element to the armamentarium of the flexible schedule. The truly hungry baby will have nothing to do with the pacifier, rejecting it immediately. Similarly, the satisfied infant who yet remains wakeful and restless will accept it with enthusiasm, settling down to a period of contented sucking which may last only a few seconds, or he may continue in a trance-like state for some time before sleep overtakes him.

Fear of air swallowing, initiating colic and the like, have proved groundless. The nipple may be attached to a small nursing bottle, a Le Page's mucilage bottle, or need not be anchored to a bottle.

It will be seen the author recommends the pacifier for the new-born period only and under special circumstances, but the stage is set for indiscriminate usage.

All that is needed now is a learned paper, tome or *Handbuch*, to prove that excessive crying or irritability in infancy can be successfully treated by the mother lifting the baby out of its cot, changing its napkin, holding it in the arms and producing a 'soothing refrain or song' (O.E.D.).

In this way the lullaby may be re-discovered, and perhaps the day will come when another old institution will be revived—the cradle, but electrically driven this time.

Commercial Union Buildings,

90 St. George's Street,

Cape Town.

18 April 1951.

I. Mirvish.

STATUS OF THE GENERAL PRACTITIONER

To the Editor: I have read with interest and some amusement the letters in which the status of the general practitioner was discussed. Even special meetings were held in some Branches where the decline (*sic!*) of the status of the general practitioner was the major subject of the evening.

In my limited experience of G.P. work extending over 15 years, I have never become aware of this so-called alarming phenomenon. It is perfectly true that we no more wear top hats, morning coat, striped pants with spats to match; nor do we drive about in a buggy with well-groomed horses and an occasional postilion. Instead of that we dress sensibly and make our calls in cars—which are unfortunately much more expensive than buggies.

It is true that the Public is more specialist-minded than before; but I am certain that not more than 0.001% of my patients see a specialist without being advised to do so by myself.

The confidence in the country general practitioner remains as before. Apart from the medical or surgical aspect, the esteem in which we are held has not declined one bit. To be a little personal, I may add that both my colleague (not my partner) and myself were returned head of the poll in the last municipal elections; and this holds good for all country general practitioners who venture into public life and try to be useful citizens as well as good doctors.

I had a spell of general practice in Cape Town, but was

grateful to be able to return to the country, where the doctor-family relationship still exists and where the doctor is a doctor in the true sense of the word and not simply a medical practitioner.

No ways and means need be sought to restore the public's confidence in his general practitioner. If, on occasion, the Public has no confidence in the local general practitioner, rather let the general practitioner try to find the cause and remedy it himself.

Are *noms-de-plume* really necessary when writing to our own Journal?

C. Frank.

P.O. Box 19,
Porterville, C.P.
20 April 1951.

EINSTEIN AND INTEGRATIONALISM

To the Editor: As a callow third-year medical student I found Dr. Freed's letter *Einstein and Integrationalism* (this Journal, 17 March) of absorbing interest, especially with regard to the cosmogeny one must formulate to-day under the impact of modern physics. However, I cannot see how he brings himself to the conclusion that this theory is a victory for historic religion and the 'poetic vision' and psychological 'insight' of the Prophets.

Granted that the Unified Field Theory disposes of a Dualistic Universe, i.e. one of the 'Body' and of the 'Soul'; but why does it mean that two ways of thinking, humanism and theism, cannot exist independently? Either of these alone is not incompatible with an 'integralist' approach.

Further, as the 'cause of all these causes' (i.e. of the cosmological pattern) Dr. Freed postulates a 'Dominant Constant', from Whom all processes derive. This is just a re-hash of the First Cause and Natural Laws, 'proofs' of a Divine Existence, which incorrectly presuppose a point at the 'beginning' of time where a Prime Mover was operant. They fall away when one asks, as does J. S. Mill in his autobiography, 'then who made God?'. As Bertrand Russell put it: 'there is no reason to suppose that the world had a beginning at all. The idea that things have a beginning is really due to the poverty of our imaginations'. Moreover the quantum theory, and, I am open to correction, Einstein's latest *tour de force* as well have dispensed with the cause-effect relationship entirely.

On what grounds does Dr. Freed claim that the religious impulse is an expression of the 'integrational force' that constitutes the basic mechanism of the universe? He writes that he 'considers' this to be the case and, in 'projecting this as I do', he manages to end up in a dogmatic and climactic credo worthy of a Revivalist gathering. I should rather side with Julian Huxley² that religion is a product partly of man's attempted explanations of some puzzling phenomena and partly of suggestion, ritual and their ilk.

An interesting paradox arises if we are to accept, as Dr. Freed does, that thought—as religious feeling—is a localized manifestation of the general life force, and religion 'is not a fabrication of the human intellect'. If this be the case, we are not the masters of our wills (nor responsible, therefore, for our actions) and so mercy and justice, crime and punishment are senseless. We are back to the concepts of nineteenth century materialism which we thought the old quantum theory had irrevocably dispelled.

Were I to venture a conclusion, I would suggest that if Einstein's 29 equations be an adequate theoretical explanation of the universe, then all we may deduce is that a Supernatural Being is not an essential postulate and, accepting the Simplicity Postulate of modern physicists (that of two alternatives the simpler is likely to be nearer the truth), He is an unnecessary postulate.

Unfortunately, however, the 'opium of the people' appears to be habit-forming.

1. Russell, B.: *Why I am not a Christian*. Rationalist Press.
2. Huxley, J.: *Religion without Revelation*, pp. 48, 68. Thinker's Library.

L. J. H.

College House,
University of the Witwatersrand,
Johannesburg.
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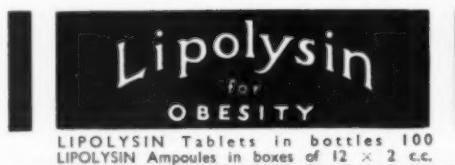
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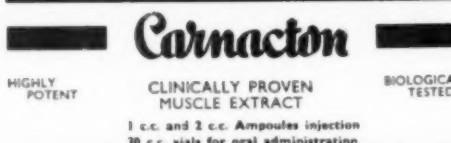
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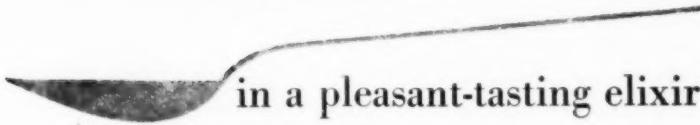
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PRAKTYKE TE KOOP : PRACTICES FOR SALE

(706) Suidweselike Kaapland naby kus. D.S. aanstelling. Geen opposisie. Premie verlang ongeveer £750. Paaiemente kan gereel word. Huisvesting beskikbaar. Goeie kans vir uitbreiding.

(674) Vennootskapaandeel in Bolandse praktyk. £1.224 gemiddelde netto jaarlike wins aan aandeel verbonde. Twee aanstellings. Huis te koop, maar is nie 'n voorwaarde vir koop van praktyk nie. Premie verlang £650. Geneesmiddels en sekere spreekkamermeubels ter waarde van £150 word by premie ingesluit. Uitstekende vooruitsigte.

(686) Noord-Kaapland. Medisyne word aangemaak. D.S. aanstelling alleen ongeveer £1,200 p.j. word. Geen opposisie. Premie verlang £1,500 en dit sluit praktyk, instrumente en meubels in, betalend £750 kontant, balans paaiemente oor een jaar.

(636) Cape Town suburban practice. Non-European. Rental for house £5 p.m. (Quote also 691, 694, 700.)

(511) Vennootskapaandeel in Sudelike Voorstad, Kaapstad. Vennootskapinkomste ongeveer £5,000 per jaar. Twee aanstellings. Afrikaner word verlang. Premie na gelang aandeel wat verkoopt word.

PRAKTYKE VERLANG : PRACTICES REQUIRED

(715) Rural Native practice, preferably Transkei or Ciskei with minimum income £1,000 p.a. or less if scope exists for expansion.

ASSISTENT, PLAASVERVANGER VERLANG ASSISTANT, LOCUM REQUIRED

(714) East Griqualand. Locum for July. Practice with D.S. appointment. £80 p.m., all found, plus first-class return rail fare, plus 9d. per mile, if locum uses his own car.

(677) Transkei hospital town, from 1 July, with view to partnership. Preferably gentle, married, aged 30 to 35 years, and fluently bilingual. Initial salary £60 p.m. plus board and lodging. Flat available. Scope for surgery. Car not required for practice.

JOHANNESBURG

Medical House, 5 Esselen Street. Telephones 44-9134-5
Mediese Huis, Esselenstraat 5. Telephone 44-9134-5

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(Pr S14) Transvaal country practice. Income approx. £1,000 p.a. Transferable appointment held. Premium £500.

(Pr S16) Transvaal hospital town. Income £2,300. No surgery done. Practice is for sale with large house at £5,000.

(Pr S22) Northern Transvaal country practice. D.S. appointment held. Premium £500.

(Pr S23) Progressive practice in S. Rhodesian hospital town. Excellent opportunity for young G.P. Present income £3,000-£4,000 p.a. Premium for goodwill £3,000. Terms accepted. £1,000 for book debts, surgery furniture, drugs, etc. Block of professional rooms and living quarters to rent at £30 p.m.

(Pr S24) Johannesburg Northern Suburb practice. Gross income £1,750 p.a. This practice is expanding rapidly. No appointments held.

ASSISTENTE VERLANG : ASSISTANTS REQUIRED

(A 024) Doctor required by Insurance Company in South West Africa. Minimum period 6 months. To commence 1 June. Salary £75 per month plus all found, rising to £100 in third month.

(A 025) Salisbury, S. Rhodesia. Assistantship for minimum of 6 months. Salary £100 p.m. inclusive. Accommodation available at £15 p.m. Applicant must have own car.

ASSISTENTSKAP VERLANG : ASSISTANTSHIP REQUIRED

(A W46) Assistantship with view in English-speaking practice by London-trained doctor, aged 31. Interested in Obstetrics.



of your patients are in need of

"B" COMPLEX THERAPY

PETERVITE "B" TABLETS

Thiamine HCl 2.0 mgm.

Riboflavin 1.5 mgm.

Calc.

Pantothenate 2.5 mgm.

Pyridoxine HCl 0.25 mgm.

Nicotinamide 20.0 mgm.

In a chocolate-coated tablet
20's, 60's, 500's

PETERVITE COMPOUND ELIXIR

Thiamine HCl 1.5 mgm.

Riboflavin 0.5 mgm.

Pyridoxine HCl 0.25 mgm.

Nicotinamide 5.0 mgm.

Liver Extract (concentrate) 15%

In TWO teaspoonsfuls of
pleasantly flavoured malt
base. 4 oz., 16 oz., 80 oz.

PETERVITE "B" COMPOUND INJECTION

Each 2 c.c. ampoule contains:-

Aneurine HCl 10 mgm. Riboflavin 2 mgm.

Nicotinamide 100 mgm. Pyridoxine HCl 5 mgm.

Calcium Pantothenate 5 mgm.

Box of 6 x 2 c.c.

MADE FOR SOUTH AFRICAN REQUIREMENTS BY



Box 38, Cape Town

Box 5992, Johannesburg

P. 13

Transvaal Provincial Administration

VACANCIES: TRANSVAAL PUBLIC HOSPITALS

Applications are invited from suitable qualified candidates for the undermentioned posts at Public Hospitals in the Transvaal. Applications should be addressed to the Superintendent or Secretary of the Hospital and should contain full particulars as to the age, professional, academic and language qualifications, experience and conjugal status of the applicant and should further indicate the earliest date upon which duties can be assumed. Copies only, of recent testimonials to be attached.

Hospital	Vacant Post	Emoluments	Remarks
Boksburg-Benoni:	Part-time Dental Surgeon (1)	£170 per annum	Bachelor of Dental Surgery
Germiston:	Medical Registrar (1)	£620—780— 820—860	Married plus (a) below. Single plus (b) below.
	Surgical Registrar (1)	£620—780— 820—860	Married plus (a) below. Single plus (b) below
Johannesburg Hospital Board and the University of the Witwatersrand:	Part-time Medical Assistant	£150 per annum	1½ sessions per week. Registered Medical Practitioner
	Part-time Senior Medical Officer	£600 per annum	Princess Alice outpatients clinic. Half a working day to be devoted to duties
	Paediatric Registrar (1)	£620—780— 820—860	Registered Medical Practitioner of 2 years' standing. Married plus (a) below. Single plus (b) below
Nigel, P.O. Dunnottar:	Medical Officer-in-Charge (1)	£1,000 x 50— 1,200	Chief administrative Officer plus clinical duties. Plus £180 per annum house allowance. Married plus (a) below. Single plus (b) below
Pietersburg:	Medical Registrar (1)	£620—780— 820—860	Married plus (a) below. Single plus (b) below
Pretoria:	Junior Assistant Physician	£1,200 x 50— 1,500	Must be suitably qualified through training and experience. Married plus (a) below. Single plus (b) below
	Clinical Assistant (Orthopaedic Dept.) (1)	£620—780— 820—860	Registered Medical Practitioner. Married plus (a) below. Single plus (b) below.
	Casualty Medical Officer (1)	£620—780— 820—860	Must be registered for at least 2 years. Married plus (a) and (c) below. Single plus (b) below
Vanderbijl Park:	Part-time Medical Officer-in-Charge (1)	£10 per month	Must be a registered Medical Practitioner
	Part-time Specialist Surgeon (1)	£102 10s. per annum	Must be a registered Specialist. ½ Session per week.
	Part-time General Practitioners (2)	£85 per annum	½ Session per week. Must be registered General Practitioners

(Continued in next column)

Hospital	Vacant Post	Emoluments	Remarks
Vanderbijl Park:	Part-time Radiologist (1)	£102 10s. per annum	Session per week. Must be a registered Radiologist
	(a)	£256 per annum cost-of-living allowance.	
	(b)	£80 per annum cost-of-living allowance.	
	(c)	Plus temporary allowance.	

In addition to salary, the successful applicants for full-time posts will receive leave privileges and rail concessions.

Closing date of applications: 29 May 1951.

Application forms are obtainable from the Provincial Secretary, Hospital Services Department, P.O. Box 383, Pretoria.

(STAF/T.H. 8/28)

Provincial Administration of the

Cape of Good Hope

(HOSPITALS DEPARTMENT)

HONORARY APPOINTMENT

Applications are invited from registered medical practitioners for the following post:—

Honorary Anaesthetist at the Victoria Hospital, Wynberg.

The appointment will be for five years, but may be terminable before the end of that period if and when the medical staffing of the Hospitals is reorganized.

Applications containing particulars of age, qualifications, experience, etc., with copies of recent testimonials should be forwarded to the undersigned by noon on Saturday, 2 June 1951.

L. Welham
Branch Representative
(No. 4733)

Provincial Administration of the

Cape of Good Hope

(HOSPITALS DEPARTMENT, PORT ELIZABETH)

PROVINCIAL HOSPITAL:

VACANCY: HONORARY MEDICAL STAFF

Applications are invited from registered medical practitioners for appointment to the post of Assistant Honorary Surgeon at the Provincial Hospital, Port Elizabeth.

The appointment will be of five years' duration, but may be renewed thereafter.

Applications containing full particulars of qualifications, etc., must be addressed to the Medical Superintendent of the Provincial Hospital, Port Elizabeth, to reach his office not later than 31 May 1951.

C. G. Keyter
Port Elizabeth
27 April 1951
Branch Representative
(2309)

Veneered Plywoods S.A. (Pty.) Ltd., Boksburg

Applications are invited from registered medical practitioners for the post of part-time Medical Officer to the above factory. The successful medical practitioner will have to attend a bi-weekly clinic at the factory and should be available whenever called upon to attend to our staff. Remuneration at the rate of £120 p.a. with a review every 3 months.

Applications to The Secretary, P.O. Box 5650, Johannesburg.

Locum Wanted

From 11 June 1951, for 3 weeks, with own car, for practice in Cape Town-Rondebosch area. Usual fees. Write to 'A. G. J.', P. O. Box 643, Cape Town.

South African Railways and Harbours Sick Fund

APPOINTMENT OF RAILWAY MEDICAL OFFICER: WARNER BEACH

Applications are invited from registered medical practitioners for the position of Railway Medical Officer, Warner Beach, and for the section of line Isipingo (excl.) to Illovo Beach (excl.), at a salary of £303 per annum, plus the fees and allowances prescribed by the Regulations of the Sick Fund, and with the right of private practice.

The duties of the appointment will include the dispensing of the necessary medicine, which will be supplied by the Fund.

The salary will be subject to adjustment in accordance with the census of members to be taken on 1 April of each year.

The appointment will be made in terms of the Regulations of the Fund, and will be subject to termination of four months' notice being given by either side.

The successful applicant will be required to reside at Warner Beach, to take up the appointment on a date to be arranged, and to carry out his duties in accordance with the Regulations of the Fund.

Applications should reach the District Secretary, Natal District Sick Fund Board, Martin West Buildings, Smith Street, Durban, not later than 2 June 1951, and should state the following:—

1. Applicant's full name.
2. Qualifications (where and when obtained).
3. Experience (where and when obtained).
4. Date of birth.
5. Country of birth.
6. Married or single.
7. Whether fully bilingual.
8. Whether South African citizen.
9. What Government appointment, if any, is held.

Canvassing by or on behalf of any applicant is liable to disqualify such applicant.

Any further particulars required may be obtained from the District Secretary, at the above address, on application.

P. J. Klem
General Secretary
(88)

Johannesburg
19 May 1951

Practice For Sale

Gingindlovu. Estate of the late Dr. N. J. de Wet, total gross income £2,200 p.a. including D.S. and M.O.H. appointments £950 p.a. House, Surgery, etc., on three acres, sworn appraisement value £3,600, to be taken over in freehold, substantial bond available.

Tenders are invited for the practice and fixed property, or practice alone. Tenders to be in the hands of the undersigned not later than 12 noon, 28 May 1951.

P.O. Box 5
Eshowe, Zululand

J. Carter
Executor Testamentary

For Sale

Victor 17-75 radiograph and fluoroscopic unit, together with extra upright Bucky and turntable seat. Apply to "A. G. K.", P.O. Box 643, Cape Town.

For Sale

Native Clinic in Northern Natal. For particulars apply to H. C. Briscoe, Mount Prospect, Natal.

BRASS PLATES

TO MEDICAL COUNCIL SPECIFICATION

VICTOR C. GLAYSHER

165 BREE STREET
CAPE TOWN

PHONE
2-5111

Printed by Cape Times Ltd., Parow, and Published by the Proprietors, THE MEDICAL ASSOCIATION OF SOUTH AFRICA,
MEDICAL HOUSE, 35 Wale Street, Cape Town, P.O. Box 643. Telephone 2-6177. Telegrams: "Medical"

Southern Rhodesia Government

VACANCY FOR GOVERNMENT MEDICAL OFFICER

Applications are invited from male medical practitioners for appointment as a Government Medical Officer in Southern Rhodesia.

Salary scale is £804 x 33—£1,200 per annum plus the right to private practice or an allowance in lieu, at present at the rate of £200 per annum, at certain stations where private practice is not permitted. The commencing salary may be higher than the minimum of the scale (not exceeding four steps in such scale) in recognition of approved previous experience. Cost-of-living and children's allowances will also be paid in terms of regulations.

The successful applicant will be required to pass a medical examination by a Southern Rhodesia Government or other duly appointed medical officer and will be provided with travelling fare from place of appointment to Southern Rhodesia for himself and, if applicable, half the cost of fares for his wife and dependent children under the age of eighteen years. He will be employed in the first instance as a Relieving Medical Officer. Official duties may include the supervision of European and Native Hospitals and Native Clinics; attendance upon Government patients and school children; performance of medico-legal work; routine public health duties; and any other work of a medical nature which may be allocated by the Secretary for Health. Motor transport will be provided for official duties.

Applications stating age, nationality, marital condition, qualifications and previous experience (giving exact dates), the earliest date on which duty could be assumed and giving the names of two persons to whom reference may be made, should be forwarded, together with copies of three recent testimonials to reach the Secretary for Health, P.O. Box 93-Causeway, Salisbury, Southern Rhodesia, on or before 7 July 1951.

Canvassing will disqualify applicants.

(3772)

The South African Institute for Medical Research

JOHANNESBURG, SOUTH AFRICA

Applications are invited from registered specialist pathologists for appointment to the senior and assistant senior grades in the Routine Diagnostic Division of the Institute. Special experience in one or other of the major subjects, Biochemistry, Histopathology, Haematology, and Bacteriology, into which the Division is sub-divided will be a recommendation.

Salary scales of the senior and assistant senior grades are £1,450 x 100—£1,750 and £1,000 x 100—£1,400 respectively plus a variable cost-of-living allowance which is approximately £190 per annum; the starting notch will be determined by the experience and qualifications of the applicant.

Membership of the Staff Provident Fund is compulsory and a certificate of sound health will be required.

Full particulars upon application to:—The Director, S.A. Institute for Medical Research, P.O. Box 1038, Johannesburg. (Staff 10. E 51.)

Overseas Medical Agency

Orridge and Company, 184 Strand, London, England, Medical Transfer Agents, have several doctors on their books desiring to emigrate to the Union. Details of practices, partnerships and assistantships, should be sent airmail. Confidence guaranteed.

LUMINAL

First of the phenobarbitones, Luminal has an unsurpassed record of reliability and efficacy. Where powerful sedation, hypnosis or spasmodysis are required, Luminal and Luminal Sodium are ready for use in tablet strengths of $\frac{1}{2}$, $\frac{1}{4}$, 1 and $1\frac{1}{2}$ grains, or in pure powder form. Luminal Sodium is also available in 5 grain ampoules for parenteral use.

PROMINAL

Now officially recognised under the generic name methylphenobarbitum, Prominal has become the drug of choice when sedation is desired without extensive hypnotic effects. It is especially indicated in the routine treatment of epilepsy (grand mal or petit mal). Available in tablet strengths of $\frac{1}{2}$ or 3 grains, or in pure powder form.

THESE STANDARD PHARMACEUTICALS ARE OFFERED BY

Winthrop Products (Pty.) Ltd.

CAPE TOWN

JOHANNESBURG

DURBAN

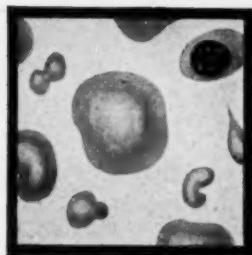
THEOMINAL

For gradual and prolonged reduction of blood pressure, Theominal combines vasodilator with sedative, to reduce vascular and nervous tension. Each tablet contains 5 grains of theobromine and $\frac{1}{2}$ grain of Luminal. The usual dose is 1 tablet two or three times daily; when improvement sets in, the dose may be reduced to 1 tablet once daily.

PROTHEONAL

When the beneficial effect of an organic iodide is desired in the treatment of hypertension and allied vascular disorders, Protheonal offers a combination of 5 grains of theobromine, $\frac{1}{2}$ grain of Prominal and 2 grains of calcium iodide ditriethanolamine. The usual dose is one tablet two or three times daily; in severe cases, 2 tablets three times daily.

LUMINAL, PROMINAL, THEOMINAL, PROTHEONAL—TRADE MARKS



★ Full therapeutic activity
guaranteed by routine
clinical tests. ★ Especially
prepared to ensure maximal
potency in small volume.

HEPASTAB FORTE

Concentrated Liver Extract

HEPASTAB FORTE combines the accepted erythropoietic properties of vitamin B₁₂ with the advantages of those factors in liver which may be of significance in macrocytic anaemias.

It is indicated in the treatment of pernicious anaemia, in which it prevents the onset of neurological complications, tropical nutritional anaemia, macrocytic anaemia of sprue, and certain macrocytic anaemias of pregnancy.

*Literature & further information from:—Medical Information Dept.,
B.P.D. (SOUTH AFRICA) PTY. LTD. P.O. BOX 8116, JOHANNESBURG*

